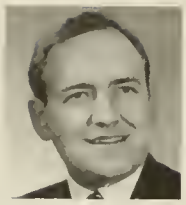
MONTANA OUTDOORS

SEPT./OCT. 1976
SIXTY CENTS



Thomas L. Judge/*governor,*
State of Montana

Willis B. Jones/*chairman,*
Fish and Game Commission

Commission members:
Joseph J. Klabunde/*vice chairman*
Arthur C. Hagenston
Spencer S. Hegstad
Dr. W. Leslie Pengelly

Dept. of Fish and Game
Wes Woodgerd/director
Fletcher E. Newby/deputy director
James A. Posewitz/*administrator*
Environment and Information Division

Steve Bayless/*chief,*
Information Bureau

Bill Schneider/*editor*
Kay Ellerhoff/*associate editor*
Marty Beatty/*circulation director*
Donita Sexton/*art director*
Vern Craig/*artist*
Tom Warren/*photographer*
Craig Sharpe/*photographer*

Wise game management brought the antelope back from near extinction. Now the prairie speedster roams Montana in great numbers. However, in many cases, this excellent game animal isn't available to sportsmen. Apparently, a growing number of eastern Montana landowners are turning away hunters even though they have plenty of antelope on their land. After years of study, biologist Charles Eustace explains the severity of the situation. See his article on page 2.

Once the most common game bird in nine western states, the sage grouse is now struggling to endure modern America. Can the sage grouse survive agricultural encroachment and coal development? Turn to pages 15 and 22 for articles on both subjects.

Front cover photo by Bill McRae.
Back cover by Alan Nelson.

ASHTON BUTTE

MONTANA OUTDOORS

Sept./Oct. 1976, Vol. 7, No. 5
© The Montana Dept. of Fish and Game 1976

contents

2 **hunting a place to hunt antelope**
a detailed explanation of recent problems with access by hunters in eastern montana. by Charles Eustace

7 **the catchall**

12 **dear f&g**

15 **a day at decker**
Bill Schneider reports on what's happening at decker coal mine and wonders about the future of this wide-open, wildlife-rich country

22 **sage grouse**
is this once plentiful game bird on its way to extinction? by Rick Wallestad

29 **of sage grouse and overburden**
this strand in the woven web of wildlife is under a severe test. an editorial by Jim Posewitz

31 **try a "wild" alternative**
if you think pork chops and steak are the last word in good nutrition. by Kay Ellerhoff

34 **good landowner/sportsman relations**
are they possible? the answer isn't as simple as it might seem. by Harley Yeager

37 **editorials**
a movie review of "grizzly"—don't waste your money; a humorous piece, "the jaws game," and the news that the flathead coalition needs some help, "for the flathead—now or never"

39 **an investment for the future**
the mount haggin purchase will benefit wildlife and recreationists. by Glenn Oakley

42 **lewis and clark meet the awesome white bear**
the grizzly provides some hair-raising adventures for the explorers and their men. by Ken Walcheck

Montana Outdoors, the official publication of the Montana Dept. of Fish and Game, is published six times each year (January, March, May, July, September and November). Contributions (manuscripts or illustrations) are welcome with the understanding that the department or the editor cannot be responsible for loss or damage. All contributions will be published at the discretion of the editor. Subscription rates are $3 for one year, $5.50 for two years, $8 for three years and $2.50 for each additional year. Individual copies are available at newsstands and regional department offices. Price per copy is 60 cents. Although *Montana Outdoors* is copyrighted, permission to reprint articles is available by writing our office or phoning us at 406/449-2474. All correspondence should be addressed: *Montana Outdoors*, Dept. of Fish and Game, 1420 E. Sixth; Helena, MT 59601.

Postmaster: *Montana Outdoors* is entered as second class mail in Helena, MT 59601. Additional entry is in Butte, MT 59701.

using game ranges

a livable environment for WILDLIFE is a quality environment for MAN

This issue contains an article announcing purchase of the Mount Haggin Ranch by this department and the Forest Service. It seems like an appropriate time to explain the department's management of these game ranges and management areas.

Game ranges are managed primarily for wildlife and recreation, and in some cases, specifically as big game winter ranges. Thus, they provide quality habitat for wildlife, and with little exception, recreational opportunity for the public.

The department encourages a wide array of outdoor recreation—picnicking, camping, cross-country skiing, fishing, hiking, snowmobiling, mushroom hunting, bird watching, photography, horseback riding and more. On some department lands, local groups hold organized outdoor events—camp outs, cook outs, etc. For example, this year there were organized trail rides on Threemile, Blackfoot-Clearwater and Bitterroot Game ranges. There are also conducted snowmobile rides on the Blackfoot-Clearwater Game Range.

F&G photo. Rocky Rothweiler

With only minor exceptions, these diverse recreational opportunities are provided year-round. At times, however, an area like the Sun River Game Range is closed for a few months when the range is wintering thousands of big game animals. Range managers consider this a critical time for the animals. Recreationists might accidentally alarm or frighten the herds or cause animals to abandon the game range and start wintering on nearby private lands.

Outdoor educational opportunities are also being realized from Montana's many game ranges. These activities include everything from day-long nature walks to formal environmental education curricula.

The important thing is that all this activity is contributing to a growing awareness of the right and ability of Montana wildlife to exist in a state of harmony with people in Montana. This harmony can only be achieved if we first understand, respect and provide for the needs of the animals. Montana's game ranges do this, and with public support the program will continue to accomplish this and to expand into other critical areas.

Mount Haggin now joins the gradually growing list of areas. Implementation of its management plan is still in the future, and you will be invited to contribute to its formulation. Objective of the plan, as with all game ranges, will be to accommodate as many and diverse uses of the land possible within the constraint of what is first and foremost—the best good for the wildlife. The many individuals who worked so tirelessly in putting this acquisition together now accept as their reward the satisfaction of knowing the ranch is there to sustain Montana wildlife and for you to enjoy.

Wes Woodgerd

Wes Woodgerd, Director
Department of Fish and Game

photo Jon Cates

HUNTING A PLACE TO HUNT ANTELOPE

by Charles Eustace

photo: Alan Nelson

photo: Jon Cates

photo: Harry Engels

"No huntin', no trespassin', no foolin' around, just keep your carcass off this here ground."

Rather substantial poetic liberties were taken translating the common "no hunting-no trespassing" sign—usually a best-seller just before the antelope season opens. The increase in these signs over the past five or

continued

ten years indicates a real problem exists in landowner/sportsman relations. The days when anyone could easily find a place to hunt antelope—or any other game, for that matter—without the persuasive talents of Federal Reserve notes are fast disappearing. For many, the frustrations of southeastern Montana's infamous gumbo roads now play second fiddle to the problems of finding a place to hunt pronghorns.

It wasn't always like this. There was a time when access was easy and hunters were welcome. In those days, Mother Nature, who is seldom disposed to idleness, had placed her fawn factories in high gear and was producing an abundance of antelope. Although most landowners enjoy antelope in reasonable quantities, excessive densities of any kind of game create a holocaust, the sole purpose of which seems to be recycling valuable agricultural crops into pellets of questionable market value. When this happens, the landowner requests certain considerations from the Dept. of Fish and Game, such as reducing the pronghorn population, which strangely enough "belongs" to the department during periods of super abundance and to the landowner during periods of dire scarcity. In times of abundance, the only workable solution open to the department is liberalizing resident and nonresident hunting regulations to allow larger harvests.

A point comes, however, when the perils of too much game pale by comparison with the perils of too many hunters. Department personnel must be quick to realize when hunter numbers need to be reduced or (1) the number of hunters will exceed the landowners' tolerance for social contacts or (2) game populations will be excessively harvested. When either of these situations occurs, the landowner resorts to his alternatives—restrictive hunting, fee hunting or no hunting at all. The result satisfies nobody.

Recent land closures in an area formerly known as Hunting District 71 in southeastern Montana indicate the speed with which land can close and its impact on antelope hunting. Land closures in this area resulted primarily from too many hunters, although the unpopular Presidential ban on 1080 poison for predator control in 1972 proved to be a potent catalyst.

In this case, the reason for high hunter densities was not to quell a rebellious game herd which had already exploded, but to prevent the anticipated explosion of one. Examining past and present antelope management policies for this area will show why hunter quotas were increased, the result of these increases and efforts to restore the situation to "normal."

The department initiated the total count aerial antelope survey in 1961. Every square mile of a hunting district is flown once every two or three years after fawns are dropped to determine (1) total population and (2) percentage of the population composed of fawns, bucks and does. In 1961, biologists counted 4,800 antelope in the approximately 4,700 square miles of Hunting District 71. By summer 1964, this number had grown to 5,800 antelope.

The devastating winter of 1964-65 took its toll. The 1967 survey indicated a herd of only 3,900. By 1970, nature had relented and the herd increased to slightly over 5,000.

In reviewing events of the past decade for this hunting district, department biologists noticed a herd of 5,800 antelope didn't produce more fawns than a herd of 4,800 antelope. The smaller herd was far more productive, presumably because of a better balance between it and the available forage. Instead of allowing the herd to build to an unmanageable nuisance, why not maintain the population at a lower, more productive level?

Since the herd had increased by 1,900 fawns in 1970, a hunter quota (3,100 permits issued) was calculated to remove 1,900 antelope, thus keeping the herd stable. That fall, hunters removed 2,100 antelope. A survey flown in 1971 to determine management success indicated the herd had swollen to 6,000. Not easily discouraged, biologists recalculated quotas (3,800 permits issued) to remove 2,200 animals, which was easily accomplished by hunters in 1971. By this time, landowners felt a little uneasy under the swarming hordes of hunters. Because of this noticeable strain in landowner/ sportsman relations, biologists didn't increase 1972 hunter quotas. However, one of the department's notoriously indomitable computers "slipped" out several hundred extra permits, resulting in an all-time record issuance of 4,100 permits.

A turning point in management came in 1972. Large numbers of bright-eyed hunters were greeted by organized closures of land to hunting. Landowners who had endured ever-increasing hunter hordes now felt the Presidential ban on 1080

ANTELOPE SURVEY AND HARVEST RESULTS FOR HUNTING DISTRICT 71

year	total count	total fawns	permits issued	harvest
1961	4,800	1,830	1,900	1,080
1964	5,800	1,860	2,600	1,915
1967	3,900	1,370	1,300	750
1970	5,100	1,930	3,100	2,100
1971	6,000	2,150	3,800	2,270
1973	7,300	2,250	2,850	1,670
1975	9,100	3,340	1,975	1,141

was the last straw. In reality, some landowners hoped that hunters who couldn't find a place to hunt would help champion the cause for reinstating 1080 in exchange for reopening closed lands.

Hunter quotas for 1973 were reduced by 1,250 permits from the previous year—in spite of the fact the herd now numbered 7,300. With landowners rapidly closing their property, hunter numbers now had to be balanced with available access, not antelope numbers. Mother Nature blessed the area with over 9,000 pronghorns in 1975, but permits were further reduced because of access problems.

Landowner surveys begun in 1973 assessed the seriousness of the access problem. By 1970, 14% of Hunting District 71 was already restricted or closed to hunting. Land was restricted in one of several ways—either the hunter had to pay or had to be a friend or relative of the landowner. Closed land was closed to *all* hunting, without exception. During 1970, the 14% closed or restricted land contained 20% of the antelope. By 1975, 51% of the land was closed or restricted and it contained 72% of the pronghorns. The bulk of these closures occurred within three years, changing the area from one of relatively easy access to one of difficult access.

What has the department done to solve the problems?

- Hunter permit quotas have already been cut by more than half.
- Better distribution of hunters was achieved by dividing Hunting District 71 into districts 710, 711, 712, and 713. This prevented many hunters from converging on one or two cordial landowners.
- The season was split into an early and late period to spread out hunter pressure.
- Extra enforcement and management personnel were assigned to areas of heavy hunter concentration to insure an orderly hunt.
- Free signs reading "no hunting without written permission" were available for landowners, along with pads containing permit slips for hunters.

Have these steps opened up land to hunting? Not that anyone could notice. But they have prevented much land which has remained open throughout the controversy from closing. And there is some indication that access may become easier because of these increased efforts. Closer cooperation with landowners and more flexible approaches to harvesting game are in order if the desired number of game animals is to be taken without making the landowner feel like a harassed Staten Island peanut vendor.

In retrospect, it is somewhat ironical that all attempts to prevent a game herd from becoming an unmanageable nusiance have resulted in precisely that.

continued

THE RANCHERS' VIEWPOINT

Jack Brooks;
Cohagen, Mont.

"I feel the main reason for restricting hunting around here was due to the loss of 1080 predator control. I guess the [Dept. of] Fish and Game didn't do that but I always felt they had enough influence with environmentalists that they could have helped stockmen keep 1080 if they had wanted to. Some of the hard feelings have softened around here since the Fish and Game raised its contribution for predator control from $40,000 to $80,000. The whole situation hasn't been entirely satisfactory because we have more antelope now than we need."

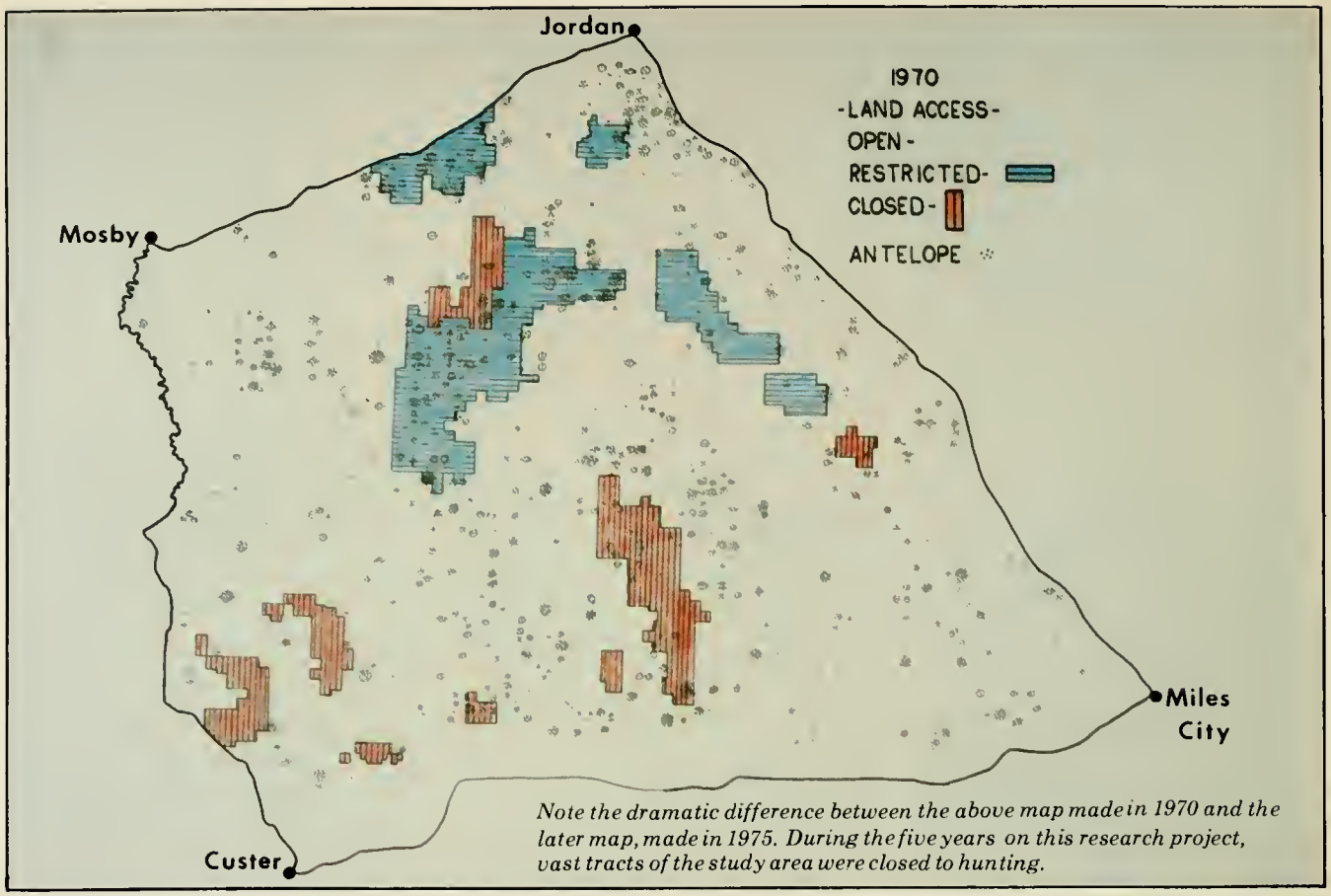
Erick Erickson;
Ingomar, Mont.

"I have always remained open to hunting. I guess I hate to turn away anyone who will ask. Ten years ago, there were 200-300 antelope on the ranch, but now there are only 20-30. The problem has been too many hunters. We had them sign in several years ago to keep a check on them and ended up with over 280 signatures. It was about that time that I considered closing the ranch to hunting. Since the area has been divided into several hunting areas and the number of hunters reduced, we have had less pressure. We only had 30-40 hunters last year, but that was still too many for the few remaining antelope on the ranch. The only solution seems to be getting more people to open up their land to hunting again."

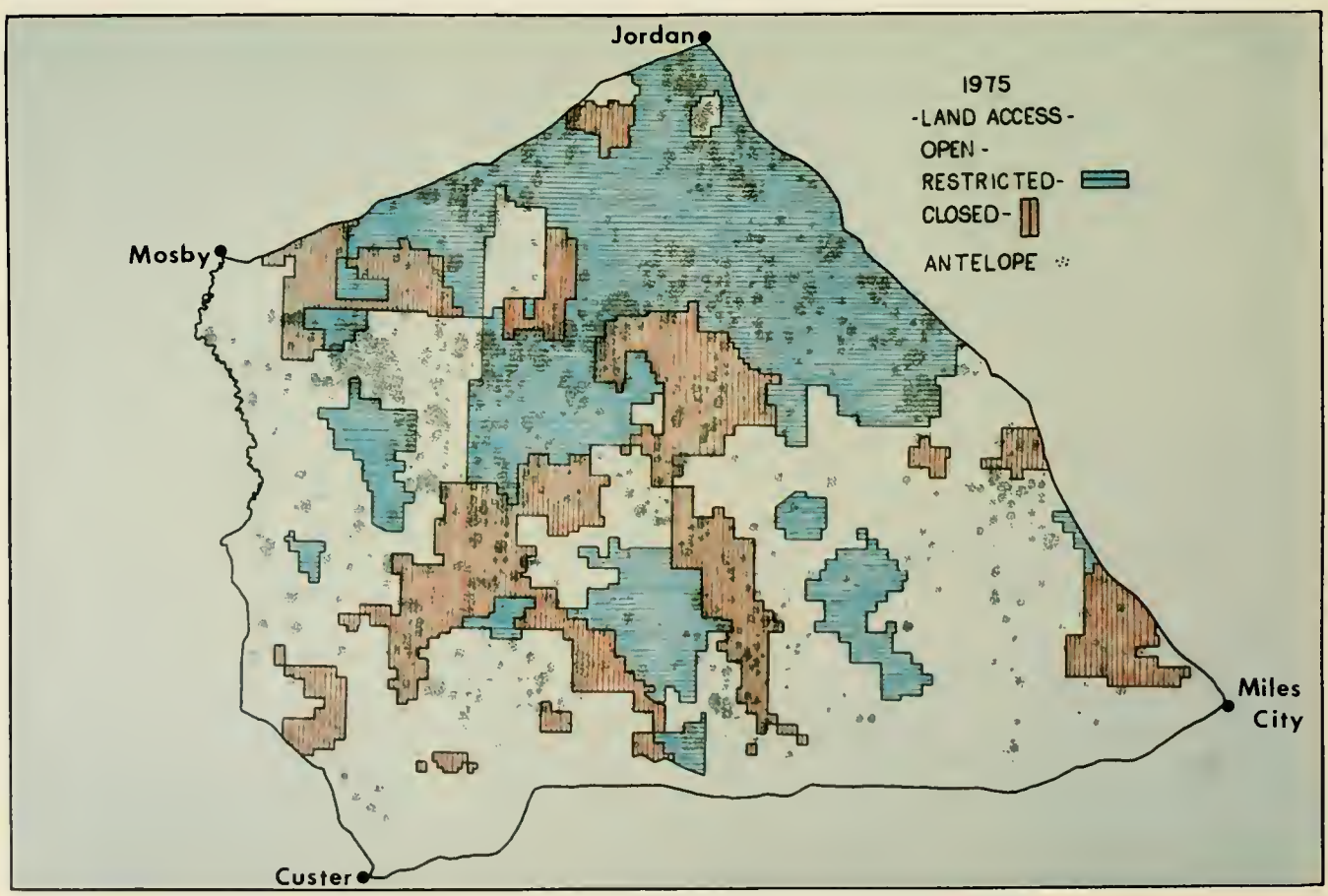
Gus Glasscock;
Cohagen, Mont.

"Hunting is restricted on our ranch for several reasons. People don't seem to respect private ownership of land. We moved up here from Texas a number of years ago where there is a strong respect for property rights. Maybe if I had lived around here all my life and had never known anything but wide-open hunting I would feel differently, but I like to have control over who uses my private property.

"There is also the economic end of it. The rancher raises and feeds the game and the [Dept. of] Fish and Game makes the money. Every time a rancher builds a reservoir or improves his range it benefits wildlife. I feel the rancher should get something in return for his efforts. The only way seems to be by charging a fee to hunt. You know, sometimes you feel that the [Dept. of] Fish and Game doesn't care about the landowner and his problems with wildlife. I lived here 10 years before I ever saw anyone on the place from the [Dept. of] Fish and Game."



Note the dramatic difference between the above map made in 1970 and the later map, made in 1975. During the five years on this research project, vast tracts of the study area were closed to hunting.



THE CATCHALL

Cedar-Bassett Creek Gets Reprieve

Cedar-Bassett Creek has received a reprieve from logging.

The 1,000 acres of mostly roadless forest land, about two to three miles north of Yellowstone National Park, literally had been placed on the chopping block by the Forest Service (FS). In 1973, the FS proposed selling the timber on the land despite public involvement hearings at which 90% of the people were opposed to any logging of the area. Now it seems the public mandate has been met—at least temporarily.

Lewis E. "Gene" Hawkes, superviser of the Gallatin National Forest, announced the Cedar-Bassett Creek area will be included in the larger North Absaroka Planning Unit. The North Asbsaroka Unit, which includes all FS land in the Absaroka Range (except the Beartooth Wilderness proposal area), has been proposed as a wilderness area. About 90% of this area is roadless.

Land use options for the combined areas, including wilderness designation, will be studied and considered by the FS. However, Hawkes noted, the logging plans already developed for the Cedar-Bassett Creek area are "still valid." The FS may still decide to log after the study. The geothermal potential of the land will also be studied.

The study should begin by 1978 but, Hawkes said, "quite possibly it could be later." Public hearings will be conducted during the two-year study. At the end, a draft environmental impact statement (EIS) will be distributed for further public comment. A decision will then be made determining the area's future. Nothing will be done to harm the wilderness potential of the area—logging, road building, etc.—at least until after the study.

The logging of Cedar-Bassett Creek has been hotly contested because the area supports a resident elk herd of about 300 and serves as the winter range for this herd and additional elk from Yellowstone Park. Elk from both areas would suffer from timber cutting. Logging would also damage the watershed, increase siltation and endanger the spawning grounds of cutthroat trout in Cedar Creek. The harvesting of timber would mean roads, opening up one more of the few wild areas left.

The decision to study Cedar-Bassett Creek and North Absaroka as a comprehensive unit came after 241 persons and groups responded to the original draft EIS for Cedar-Bassett Creek which proposed logging it. Terry Johnson, assistant long-range planner for the Gallatin National Forest, said "the things the public told us" greatly influenced the decision. He said the public told the FS "you just can't plan segments [of land] without considering the others."

Another reason contributing to the decision, Johnson said, is logging may not be economically feasible if the resulting loss of wilderness and wildlife exceeds the benefits gained by logging.

If the FS had gone ahead with the logging, Johnson added, environmental groups "probably would have gone to court." —*Glenn Oakley*

Meet Teddy, who lives on the Sequim Game Farm in Washington. This is the same grizzly bear that starred in the movie, "Grizzly." The real Teddy displays behavioral patterns opposite of the bear cast in the film. Witness former Fish and Game Commissioner Jack Cohn with his arm around Teddy while feeding him a piece of bread with the other hand. Actually both roles—in the movie and at the game farm—depart drastically from the wild, free-roaming grizzly bear of Montana.

WILDLIFE DOLLARS

Many hunters are aware they play an important role in funding America's wildlife conservation programs. But how much do hunters actually contribute and how significant is their share? Where does the money come from, and where does it go?

* * *

Some 16.6 million hunters paid $154.9 million for state hunting licenses during 1975 (which is over $12 million more than 1974). Revenues from the sale of hunting licenses provide a significant portion of the budgets of state wildlife agencies and are used to carry out various agency programs such as research, habitat acquisition and restoration and enforcement. The dollars from hunting and fishing licenses together provide (on a nationwide average) 62% of the annual income of these agencies.

Since 1923, hunters have paid over $2.1 billion for state hunting licenses and fees.

* * *

Hunters paid $51.1 million in excise taxes on sporting arms and

continued

recycled paper

ammunition during 1975. Revenue from these excise taxes goes to state wildlife agencies based on a formula which considers the number of hunting license holders and the size of the state. These dollars are used on projects like acquisition and research.

Sportsmen also paid $11.8 million in excise taxes on hand guns and archery equipment. About 70% of this total is allocated to the states for wildlife projects. The remainder is used for hunter education programs, from which about one million students are graduated each year.

Together, these excise tax dollars provide (on a nationwide average) 15% of the annual income of the state agencies. Since 1937, hunters have paid over $687 million in excise taxes.

* * *

Hunters also spent about $11 million for duck stamps in 1975. This money is used to acquire important wetland areas for wildlife.

* * *

Sportsmen's dollars from license fees and excise taxes together provide (on a nationwide average) 77% of the annual income of the state agencies. On the average, only 4% of the annual income comes from general funds (taxpayers' dollars).

All together, sportsmen have contributed over $3 billion over the past 50 years. Clearly, the American sportsman has been the major contributor to wildlife restoration programs, providing suitable habitat for game and nongame species. —*National Shooting Sports Foundation*

BUT WE STILL NEED HIM . . .

If there is a happy way to depart this world, then Al Riegel came near it when he passed away beside a favorite fishing stream June 6, 1976. A friend and fishing companion said the ardent and widely known sportsman passed on with a fishing rod still clutched in his hand.

Riegel was a native of Colorado and moved to Helena in 1929. He was employed with Mountain Bell Telephone Co. until his retirement in June 1970 after over 47 years of company service. He was also a partner in the Capitol Realty Co. which was recently dissolved.

Riegel became active in fish and game matters during some of the most stormy periods in the Dept. of Fish and Game's growth. Nearly every state senator and representative knew him by name as he persistently prowled the halls of the Capitol lobbying for bills to support management of the state's wildlife. He became such a popular figure that both the Montana House and Senate presented him with plaques upon his retirement.

Riegel was an active member of the Helena Rod and Gun Club from 1946 through the 1950s. He was also a member of the Montana Wildlife Federation and served a one-year term as its president in 1948. For several years, he served as a western regional director of the National Wildlife Federation and became nationally known.

For years, elk migrating to winter

Phil and Robin Tawney

AMERICAN MOTORS HONORS TAWNEYS

Each year, the American Motors Corp. presents 20 awards for "outstanding achievements in conservation." This year, one of the coveted awards went to Robin and Philip Tawney, a young married couple from Missoula.

After earning undergraduate degrees from the University of Montana in Missoula (Phil in political science, Robin in journalism), the Tawneys first entered the Montana conservation scene as legislative interns. While working for the legislature, it became obvious that Montana needed a statewide citizens' organization to represent the public's view on environmental legislation and policy. So they formed one—the Environmental Information Center (EIC). Although many fellow conservationists helped, the Tawneys were largely responsible for getting the EIC off the ground.

The organization exists almost solely on small donations from a wide cross section of Montanans. During its early days, the EIC existed on a minute-by-minute basis. At times there wasn't enough money to pay the phone bill. And the Tawneys refused to draw even their token salary. But they stuck to it. And today—only three years after its inception—the EIC carries a strong voice in Montana decision making.

The EIC has helped win approval of several major environmental laws. In addition, the statewide organization researches land use problems, helps other citizens' groups, informs the public on resource issues and monitors state agencies to assure they are working in the public interest. The EIC is the only Montana citizens' organization to offer these services statewide.

The Tawneys are in Ann Arbor, Mich., where Philip is doing graduate work in resource management and law. Meanwhile, Montana conservationists anxiously await their return. And special interests that are exploiting Montana would prefer they stay in Michigan.

As an aside, at least 10 former American Motors award winners endorsed the Tawneys for this honor, which includes a bronze sculptured medallion and a $500 honorarium.

recycled paper

quarters in the Sun River had nowhere to go but ranchers' haystacks. Riegel, a member of the Sun River Conservation Committee, was instrumental in establishment of the Sun River Game Range, an area set aside for winter use of wildlife, primarily elk. This range still remains one of the state's most successful management areas.

Sportsmen, wildlife enthusiasts and other friends of Al Riegel will remember him as a trail blazer in wildlife protection and management.

WALK-IN HUNTING AREA OPENS

The Montana Fish and Game Commission has approved an agreement which will open about 70 square miles northeast of Drummond of previously posted land to hunting this fall. The commission, nine individual landowners, Bureau of Land Management and the Dept. of Natural Resources and Conservation cooperated in the agreement.

To make access available to hunters, a special management area was created. Hunters can walk or ride horses, but the area will be closed to vehicles. It will be open during the regular hunting season only, not during the early archery season. The department will post gates and other access points against vehicle use and patrol the area. Areas surrounding ranch buildings and livestock will be posted.

This is the third area in Montana where access for hunters has been provided by cooperative agreement on special management areas. Others are in the Blackfoot-Clearwater vicinity of west cental Montana and Square Butte area, east of Great Falls.

PROPER CARE INSURES GOOD EATING

If you are one of the few persons who doesn't like wild game, maybe you experienced meat improperly cared for. True, some game animals may not be as flavorful as others, and there may be no accounting for the difference. But most wild game is good if it has been properly cared for. The quality of game is too often lost somewhere between the shot and the kitchen.

There is some room to excuse hunters for doing a ragged job of dressing game. Most aren't professional butchers and the dressing out often occurs on a steep hillside in a windstorm or under other difficult conditions. However, no excuse exists for meat spoilage, even though the butchering job may be ragged.

When a game animal is downed, first cool the carcass as soon as possible. A clean kill will definitely affect the quality of meat, but immediate cooling is most important. Bacteria begin the job of spoilage the instant an animal is dropped. Heat is necessary for bacterial growth, so quicker cooling results in less spoilage.

An animal shot in the chest bleeds profusely internally and requires no additional bleeding. A shot in the head, neck or spine may kill instantly but often produces little hemorrhaging, so the carcass should be bled to improve meat quality. Don't bleed by cutting the animal's throat. This is a messy system which severs the esophagus. Place the animal with its head downhill and insert the knife into the neck at the point of the brisket near, but not into, the esophagus. Cut upward, severing a large vessel leading to the heart. (Avoid bleeding if you plan to mount the cape.)

Immediate removal of the viscera and esophagus starts the cooling process. Water may be used to clean out the body cavity. Most butchers agree that washing an animal out does not damage the meat and it may be desirable if the shot or inexperienced dressing leaves a mess in the carcass. But when weather is warm, quick drying a carcass helps discourage flies. Water in the carcass does slow down the drying process.

A field dressed carcass may be wiped out or even placed in the sun for a short time to facilitate drying. Some hunters smear exposed meat with blood from the body cavity. The blood dries in most spots, creating a protective "glaze" that discourages flies. A liberal sprinkling of black pepper also repels flies and other insects.

Hang field dressed carcasses in

continued

photo: Jon Cates

WHICH WAY IS IT GOING?

The above photo is a black and white reproduction of a color picture from the 1976 *Montana Outdoors* wildlife calendar. After the calendar started to circulate, we began receiving some very unusual calls. In essence, the callers asked, "Which way is it going?" This "problem" had not occurred to us—*until* we started taking a very close look at the photo. What do you think? Is the antelope walking *away from* or *toward* the photographer?

recycled paper

the shade so air circulates around them. If hanging is impractical, drape the carcasses belly up over deadfall, sagebrush or anything to keep them off the ground. In very warm weather, skin elk and possibly even deer to speed cooling. Cheesecloth or meat sacks discourage flies, magpies and jays and still allow cooling. Remember, place game tags so they are easily visible.

Animals might be attracted to carcasses left in the woods—and the longer a carcass is left, the greater the chance. Bears finding a carcass may feed on it the minute it's been left. However, most other animals are more cautious. Coyotes come in the first or second night to investigate, but they don't feed until the third night or so when the human scent is gone. If a carcass must hang for some time before taking it home, leave some man-made item in a conspicuous spot—anything from an item of clothing to a thermos jug—to act as a scarecrow.

There's no excuse for game meat spoilage. Proper care of your game animal insures good eating.—*Vern Craig*

Gov. Thomas L. Judge accepting a scroll symbolic of the title of the Mount Haggin Ranch from G. Jon Roush, executive vice president of The Nature Conservancy. See the article on this acquisition on page 39 (F&G photo: Gary Thompson).

NEW WAY TO FUND CONSERVATION

For decades, sportsmen have steadily funded the activities of state wildlife and conservation departments. Even though this system has reaped many benefits for outdoor enthusiasts, the pressures of modern America have often been too much for this limited source of income.

Missouri conservationists, for example, realized they were unable to provide a suitable conservation program with their present budget. Now, they're doing something about it.

In an unprecedented move, Missouri conservationists are working to place a special initiative to fund conservation on the November ballot. Specifically, voters will have the option of approving an additional one-eighth of one cent sales tax on themselves to fund conservation. This will mean about $3-4 per year for most Missourians. An estimated $25 million would be raised in the next 20 years.

Most of the new revenue would go for acquisition of wetlands, natural areas, stream access, public hunting areas, etc. However, other programs such as research, management and enforcement would likewise benefit.

The underlying principle of this plan is that everybody benefits from conservation. Thus, everybody should contribute.

ROCKY MOUNTAINS, photography by David Muench, text by David Sumner, Graphic Arts Center Publishing Co., Portland, Ore., 1976, 186 pages, $30.

Few books have the ability to unlock rich and stirring remembrances from one's memory of a distant land resided in during the not-too-distant past—a land of towering vertical rocks, fragile and complex ecosystems and intense beauty. David Muench's and David Sumner's "Rocky Mountains" did exactly that for me.

They unlocked a unique kind of remembrance that numbs the mind's conscious part, the part that wants to explain as well as sense—that part which cannot comprehend the acute awareness of sensing the pleasure of the contrast between the sharp, cold bite of a mountain wind and the warmth of a south-facing granite ridge, of watching ice flutings flashing in the sun or looking down at the valley glaciers scored with dendritic crevasses that appear like wrinkles on old skin, of viewing in an alpine meadow while capricious winds blow and gazing at a riotous splash of brilliantly colored flowers and having a detached feeling that the universe is looking over your shoulder. No perusal can exhaust the teeming richness awaiting one in such a land.

Sumner skillfully blends the essential components of a complex mountain system into a final product that gives the reader an excellent overview of a land poorly understood. Sumner leaves few stones unturned as he presents to the reader capsulated sections on geologic origin and formation, climate, denizens occupying the numerous tiers of life zones, early man's invasion of the Rockies, the mountain man and the other colorful traces of human history that followed, the boom and bust eras and a superb section on the accelerating signs of a plundered and scarred domain. The reader also has a chance to hike along a

recycled paper

nameless 13,150-foot ridge with Sumner in central Colorado's Sangre de Cristo Range and experience why the touch and strain of ice and rock under one's hiking boots have the ability to send surging circuits of pleasure through the body.

The bulk of "Rocky Mountains" is filled with Muench's bold and sensitive photographs—photos which span a wide spectrum of moods, expressions and beauty. The viewer will quickly note that Muench has the rare artistic ability to capture the emotions, mysteries and wonders of nature's wide array of mystic forces. His photographs have documented a collection of impressions that will, hopefully, stir a viewer into realizing that the Rocky Mountains now represent the last reach of open space and wilderness left in the continental United States.

Mountain climbing has been defined by some as a purposed completion—the summit; yet the best of it is never that final victory, for after that there is only the descent. The best moments lurk in the tension just before the success. You will find the same analogy true in your sojourns through "Rocky Mountains."

I have one recommendation: Read Sumner's text first, and then pick a quiet, secluded spot and carefully view Muench's photographs. By doing so, your impressions of the Rocky Mountains will be greatly magnified and appreciated.—*Ken Walcheck*

contributors

There was a time when antelope hunters had easy access and most landowners welcomed them. Now, the "welcome" sign usually reads "no hunting—no trespassing" and the hunter spends most of his time "Hunting a Place to Hunt Antelope." As **Charles Eustace** writes in his article beginning on page 2, "For many, the frustrations of southeastern Montana's infamous gumbo roads now play second fiddle to the problems of finding a place to hunt pronghorns." He traces the history of the problems and points out some management steps the department has taken to solve them. In addition, he interviews three landowners who tell readers how they feel and—more important—*why* they feel the way they do. A game biologist headquartered in Forsyth, Eustace holds a B.S. in zoology from Kansas State University, Manhattan, and an M.S. in fish and wildlife management from Montana State University, Bozeman.

When the nation was celebrating its centennial, sage grouse were considered the most plentiful bird in the area that now encompasses the nine western states. Then man and his agricultural accouterments arrived. And the war on sagebrush—a critical factor in the sage grouse's wintering, brood rearing and nesting requirements—began. Turn to page 22 where **Rick Wallestad** explores the question in "Sage Grouse: an Endangered Species?" A former game management biologist for the department, Wallestad holds a B.S. and M.S., both in wildlife management, from the University of Minnesota and MSU, respectively. He is now employed with the Haugen Gamble store in Amboy, Minn.

When you consider the facts—that numbers of hunters and fishermen in Montana have drastically increased over the years and the amount of private land open to hunters has decreased—you also have to consider the question: "Good Landowner/Sportsman Relations—Are They Possible?" As **Harley Yeager** points out in his article beginning on page 34, the problem has many facets—the sportsman's increased leisure and mobility, the landowner's economic dilemma, etc. Yeager is the department's information officer in Great Falls, a position he previously held in both Billings and Glasgow. He holds a B.S. in fish and wildlife management and has done graduate work in that field and also in rare and endangered wildlife, environmental policy and administration. He is chairman of the Montana Wildlife Society's publicity committee.

Mount Haggin Ranch lies within a four-hour drive from six of Montana's major cities. The diverse country provides excellent habitat for elk, moose, black bear, mountain lion and bighorn sheep and the streams offer fine catches of cutthroat, rainbow and brook trout. Recreationists will have an opportunity to enjoy some 76,000 acres of this land because of a recent Dept. of Fish and Game-Forest Service acquisition made possible through efforts of The Nature Conservancy. Turn to page 39 for **Glenn Oakley's** article, "Mount Haggin—an Investment for the Future." Oakley joined MO's staff in June as our summer intern. A senior in journalism at the University of Montana in Missoula, he is a photographer for the Montana Kaimin, UM's student newspaper. As an "Air Force brat," Oakley has lived in Missouri, Illinois, Ohio, England and Alaska, but has called Montana home for the past three years.

In the time of Meriwether Lewis and William Clark, Missouri River country was capricious, angry, turbulent, wild, colorful—the kind of land that once grew and nourished the "great white bear," the grizzly. At first the explorers disregarded the Indians' tales about the grizzly as gross exaggerations. However, it didn't take long before Lewis confessed he would rather "fight 2 Indians than one bear." Turn to page 42 for an entertaining, exciting account of the adventures when "Lewis and Clark Meet the Awesome White Bear." **Ken Walcheck's** byline is certainly no stranger to these pages. He is the department's information officer in Miles City and served as an assistant professor of biology at Northern Montana College, Havre. Assisted by other department employes, he recently conducted a float trip down the Missouri as a three-credit course for NMC students. Lectures about the river's wildlife, fish, history and biology were provided. Walcheck holds a B.S. in wildlife conservation and biology from Wisconsin State University in Stevens Point and an M.S. in applied science (ecology) from MSU.

recycled paper

dear F&G

Endorse Wilderness Classifications Cautiously

I am continually amazed to see Montana's wildlife managers and hunters endorse more wilderness classification as a benefit to hunting.

Here in Washington we have over one million acres in wilderness and federal agencies propose several million additional acres to be added to the system. These agency proposals are conservative when compared to those of environmental action groups. In Washington, wilderness user permits are now required and groups using wilderness are severely limited in size. The Forest Service (FS) prohibits aerial landing in wilderness and horse use is either prohibited or stringently regulated. Use of helicopters to stock fish in the proposed Alpine Lakes Wilderness Area (600 lakes) will be prohibited under the FS' management plan, even though the Dept. of Game advises this use is the only practical way to maintain sport fisheries in this area.

National preservation groups such as the Sierra Club, The Nature Conservancy, Audubon Society, Wildlife Federation, Friends of the Earth and the Wilderness Society are the primary forces behind wilderness classification. A number of these groups candidly oppose hunting and horse use in wilderness, while the hierarchy of the other groups do so, but in secrecy for obvious political reasons.

Organized horsemen and hunter groups in the state of Washington understand the long-range implication of wilderness classification on their activities. The Washington State Horsemen Assn. and two of the state's largest hunter organizations, the Washington State Big Game Council and the King County Outdoor Sports Council, all actively campaign against additional wilderness. The Washington State Sportsmen's Council, by its constitution and resolutions, also opposes further withdrawals from the multiple-use base. They know the strategy and long-range intentions of wilderness preservation groups are to preclude their activities.

Certainly there are great dissimilarities between Washington and Montana wilderness areas and use patterns. However, congressional or federal administrative decisions on land use and environmental matters are usually categorically applied by the federal government, without regard to regional differences or economic and recreational consequences. Therefore, hunting and horses may be precluded in Montana's wilderness, through congressional, administrative or court action, even though the area of controversy may be limited to Washington and California wilderness areas.

How long do Montanans believe they can preserve the right to ride and hunt in wilderness areas, considering the decision on such use will be decided in Congress under combined lobby efforts by national preservation groups? Why must outdoor users be forced into putting on a backpack? Think about it.—*H. A. Buzz Chevara, chairman, Forest Conservation Committee, Washington State Big Game Council; Seattle, Wash.*

• *The department doesn't categorically support or oppose wilderness proposals. In some cases, we support such action because it's obviously the only option available to protect a wildlife resource. In other cases, wilderness status may complicate management to the detriment of the wildlife resource.*—Ed.

REFUGE ARTICLE DISGUSTING

Hank Fischer's article on Red Rock Lakes National Wildlife Refuge was disgusting, to say the least (Jan./Feb. 1976).

It would seem many of our university people are hellbent to get rid of multiple-use of federal lands here in Montana and so distort the truth in every way possible. Perhaps our young people who are soon going to have the burden of taxes should begin to study how much grazing, forestry and mining industries pay into state and county taxes. True, people from other states would like to see everything in Montana one big playground.

Grazing on the Red Rocks Refuge pays $19,340.45 into Beaverhead County which goes to the road and school funds of this county. This does not include the taxes ranchers pay on cattle that graze refuge land.

The swan population stayed pretty much the same, old-time citizens tell me—and survived without winter feeding—before the government

National Hunting & Fishing Day

recycled paper

took the land away from ranchers.

As to the silt in Upper Red Rock Lake, have you considered the possibility that earthquake movements may have tilted the valley floor? The earthquake tilted our hay meadow, because we had a ditch used to irrigate before the 'quake in 1959 which would not carry water afterward.

I could relate some unbelievable stories about that refuge, firsthand knowledge—not gained by reading Winston Banko. Does he tell in his book that he controlled trapping beavers until the grayling were almost lost since they couldn't make it up streams through the beaver dams to spawn?

If the cattle are so harmful to the birds, why do we have so many of the same kinds of birds nesting and raising young on our ranch, located about six miles from refuge boundaries?

I'd like to see someone with experience and common sense look over the situation at Red Rock Lakes before any more radical changes are made.—*Elizabeth Breneman; Dillon, Mont.*

SPRINGBOARD

FOR DISCUSSION

NONGAME DOLLARS

I've read Hank Fischer's article, "The Nongame Funding Dilemma" (May/June 1976) and can't help but comment on its contents.

I think the Wildlife Management Institute's suggestion (tax on outdoor recreation equipment) should be thrown out the window since the fairness of such a tax is questionable. I've seen many indoor people enjoy nongame species as well. It just plain doesn't make sense.

Also, I'm strongly against taxation of "those who contribute most heavily to the destruction of wildlife habitat." By doing this "they" (coal companies, power companies, subdividers, etc.) could claim that "their" purpose is sound and good because they support nongame species, when their presence in Montana has always been a burr under my pants.

About the only reasonable and fair suggestions I would support are the $1 check-off fee on the state income tax and the voluntary $5 nongame certificate. This way Montanans could shout, "We acknowledge *all* animals' importance and *support* them." —*Marcus Haugeto, FPO San Francisco, Calif.*

• *Montana already offers a $5 voluntary nongame certificate. The revenue from sale of this certificate goes into nongame management.* — Ed.

DEAR MR. DRASNIN

Your letter to *Montana Outdoors* (May/June 1976), Mr. Drasnin, although lengthy, contained little fact concerning the CBS documentary, "The Guns of Autumn"—which you made up, and I emphasize "made up."

Without going into detail, you insinuated that I had been badly misinformed. Since I personally talked to the same people you had on your show, are you insinuating they all told me lies, yet told you the truth?

The main thing we want to keep in mind is that "The Guns of Autumn" was supposed to be a documentary. If this was a documentary, then I can only assume other CBS documentaries are made the same way. CBS makes up the situation, cons the actors and then dumps it on the public like so much garbage—which they are supposed to gobble up as fact.

I am delighted to see that CBS has a $300 million lawsuit pending against it and deep down I think you and I both know that "The Guns of Autumn" is not the issue, but whether CBS can make up documentaries with fact or fiction.

It is interesting to note that CBS appears to be having problems with some of its other reporters in Washington and another watchdog group called "Accuracy in the Media" seems to be making it pretty hot for you boys also. They seem to think that the only time CBS comes near the truth is when it crosses over from one extreme to the other.

I don't know about the other documentaries you produced, but I'll bet this is one you wish you had done more homework on. —*Jack Atcheson, president, Jack Atcheson & Sons, Inc.; Butte, Mont.*

NRA GETS THE JOB DONE

I have just read the letter, " 'The Guns of Autumn' Producer Has His Say" in your May/June 1976 issue. If the hunters in Montana and the U.S. don't wake up, before long hunting and the right to own a gun are going to be things of the past.

I have a letter from the National Rifle Assn. (NRA) that says as of November 1975 only 8,050 NRA members are residents of Montana. Yet the state Fish and Game sells something like 100,000 resident "A" tag deer licenses in Montana. It is the *law* that a youth in this state take a hunter safety course put out by the NRA before being licensed. Yet what does your publication or the Fish and Game do for the NRA? All the talk and bumper stickers won't get the job done. The NRA might if we had about 91,950 more members from this state.

It is time that the people in Montana quit talking and laying back

continued

recycled paper

and got behind this thing. I would think that the Fish and Game and *Montana Outdoors* would too.—*Dennis Hammill; Kalispell, Mont.*

CONSERVATION ILLITERATES

Dr. W. Leslie Pengelly's article, "The Art of Social Conservation," (May/June 1976) puts the blame for the environmental crisis where it belongs—on too many conservation illiterates. The immediate incorporation of ecological principles into our society's behavior and values is essential. Whether technology can keep pace with the material demands of overpopulation is not the question. Without "social capital," cultural and aesthetic interests, life would be reduced to a purely physical process.

As a sportsman, it is these spiritual intangibles that I find so rewarding with each outdoor experience. This is why with all due respect to "progress" and the extent to which it justifies my laziness, it is the wild uncivilized places like Montana that make my life worth living.

If we lose our freedom, opportunity and enjoyment I will only laugh at the superiority of the human race. We had the capacity to manipulate our destiny to meet our needs, yet neglected to do so.

I am grateful to *Montana Outdoors* for promoting the environmental consciousness we all so urgently need.—*Stuart Osthoff, Madison, Wis.*

BRICKBATS AND KUDOS

Those of us in the mining industry who were completely disgusted with the article written by *Montana Outdoors*' Bill Schneider in the April 1976 *Outdoor Life* ("Showdown in the West") can benefit from a more thoughtful discussion of the problem as espoused by Dr. W. Leslie Pengelly ("The Art of Social Conservation," in the May/June 1976 issue of *Montana Outdoors*). Schneider's prejudiced, lurid and most often completely inaccurate representations of mining activities today do more harm than good, and are more befitting of an environmental extremist than an editor who should be charged with honesty in reporting.

Kudos to Dr. Pengelly.

Brickbats to Schneider.

Despite Schneider, re-enter my subscription to *Montana Outdoors*, only on the premise that we hear more from Dr. Pengelly and Hank Fischer and less from Schneider.—*Rudi Forhan, chief geologist, New Mexico operations, The Anaconda Co.; Grants, N.M.*

BIRNEY BIOLOGIST PRAISED

Our school subscribes to your wonderful magazine, *Montana Outdoors*. All the members of our small country school in Birney, Mont. agree that your magazine is super and is a very worth-while periodical. Keep up the good work!

There is another thing we would like to mention. Here in Birney we have a Fish and Game biologist to whom we would like to give recognition and thanks for all he has done for our school. During the past two years this man, Mr. Steve Knapp, has included us in many of his wildlife studies. We have learned about and observed the tagging of game fish in our river and the dancing rituals of the the sharp-tailed and sage grouse. These are only two of the many things Steve has taught us. His interest in our school and his efforts on our behalf are greatly appreciated. We are very grateful to him.—*Sarah Carrel, for the Birney Public School; Birney, Mont.*

•*Apparently, Sarah, you and your classmates are not the only residents of the Birney area who think Steve Knapp is doing a fine job. A petition urging an extension of his work in the Ashland-Birney-Decker area was sent to Wes Woodgerd, director of the Dept. of Fish and Game, with a copy to Willis B. Jones, chairman of the Fish and Game Commission. Over 20 persons signed to indicate their support.*—Ed.

MONTANA'S TRUE BEAUTY

As a student at Flathead High School, I have enjoyed *Montana Outdoors* very much. I first became acquainted with your magazine in my sophomore class, "Literature for the Outdoorsman." It certainly helped to improve the class. As a senior, I have read it ever since. I feel your magazine and staff should be congratulated on such an outstanding job.

Your magazine is a great contribution to the beauty of Montana and its people. I particularly like the recent information on all forms of hunting, informing people of the helpfulness or harm it has on Montana's wildlife. Your magazine brings to the attention of the public many controversial issues such as recent developments on subdivisions, pollution, mining destruction, etc. that Montanans feel have an adverse effect on Montana's wildlife.

The beauty of Montana is seen in every issue of MO, from the outstanding wildlife photos to the breathtaking scenery shots. I would like to give my word of praise to two pictorials, "Big Game Scenes for Framing" and "Game Bird Scenes for Framing" in the Sept./Oct. 1974, 1975 issues, respectively. These full-page color photos are of the greatest quality, showing the true beauty of Montana's wildlife. I sincerely hope in future issues that this series will include waterfowl, nongame wildlife and wildflowers as you stated.

I feel the only way your magazine could better itself is by being published every month.—*Jordan Ayers; Kalispell, Mont.*

MOVING?

If you're planning to move in the near future, please attach the label from your last issue and send it and your new address to *Montana Outdoors*, Department of Fish and Game; Helena, MT 59601.

NEW ADDRESS:

Name _____

Address _____

City _____ State _____ Zip _____

recycled paper

F&G photo: Mike Aderhold

A Day at Decker

by Bill Schneider

It has always been difficult to think positively about the effects of strip mining the northern Great Plains. But this was especially true as Sam Scott and I watched those 17 male sage grouse strutting around hoping to lure in hesitant hens. Under the strutting ground lies about 58 feet of "strippable" coal which may soon be strip mined. Such a sight really makes one wonder about the future of this wide-open, wildlife-rich country.

Can strip miners put this land back together after they remove the coal? Would the grouse, deer and other wild animals return after mining? Could widespread ruination like that found in infamous Appalachia be avoided in the West?

Sam Scott, who supervises range and wildlife research for Decker Coal Co., thinks so. He agrees that strip mining will adversely affect wildlife, water quality and aesthetic values. But the companies *are here* mining, he reminds, so let's do the best job we can to restore and protect natural values.

That morning we were on our way to the Decker mine, which in 1975 happened to be North America's largest strip mine, producing about 9.25 million tons of coal. The mine is 25 miles north of Sheridan, Wyo., just over the border in Montana. The miner is Decker Coal Co., owned by Peter Kiewit Sons' Co. and Pacific Power & Light (PP&L).

Decker is mining on the west side of the Tongue River Reservoir. However, future plans call for two more mines—one just north of the existing operation (Decker North) and another on the east side of the reservoir (Decker East). (See map.) If approved by the Montana Dept. of State Lands, these expansions will bring annual production to approximately 20 million tons.

Yes, Decker is the largest, Scott admits, "but we also want to be the best."

By "best" he means, among other things, most concerned about the land and wildlife. Judging from the number of environmental projects under way, Decker may reach its goal. Decker is doing more to protect wildlife than most other coal companies. Briefly, these are the projects:

• **Land reclamation**—Basically, Decker's reclamation program goes like this. Before stripping, giant scrapers peel off the topsoil and either stockpile it for later use or spread it over spoils which have already been graded and contoured. After being respread, the topsoil is fertilized and seeded. As required by state laws and regulations, this basic reclamation procedure is under way at all Montana strip mines.

In addition to its own efforts, Decker funds reclamation research by Montana State University (MSU), Bozeman. Also, the federal government, through an arm of the Forest Service called Surface Environment and Mining (SEAM), is

continued

experimenting with planting various grasses, shrubs, trees and forbs at Decker. The SEAM project is federally funded. And Decker cooperates, providing land, manpower and equipment.

Scott feels reclamation activities have been very encouraging to date. Many plants important to wildlife have been "fairly easy to establish," according to Scott. He also notes plantings are diverse, including mostly native species. Hopefully, vegetative diversity, so vital to wildlife and to stable ecosystems, will be restored. However, the jury is still out, as no long-term results are available.

"Of course, it won't be exactly the same," Scott concedes, "but it should be close."

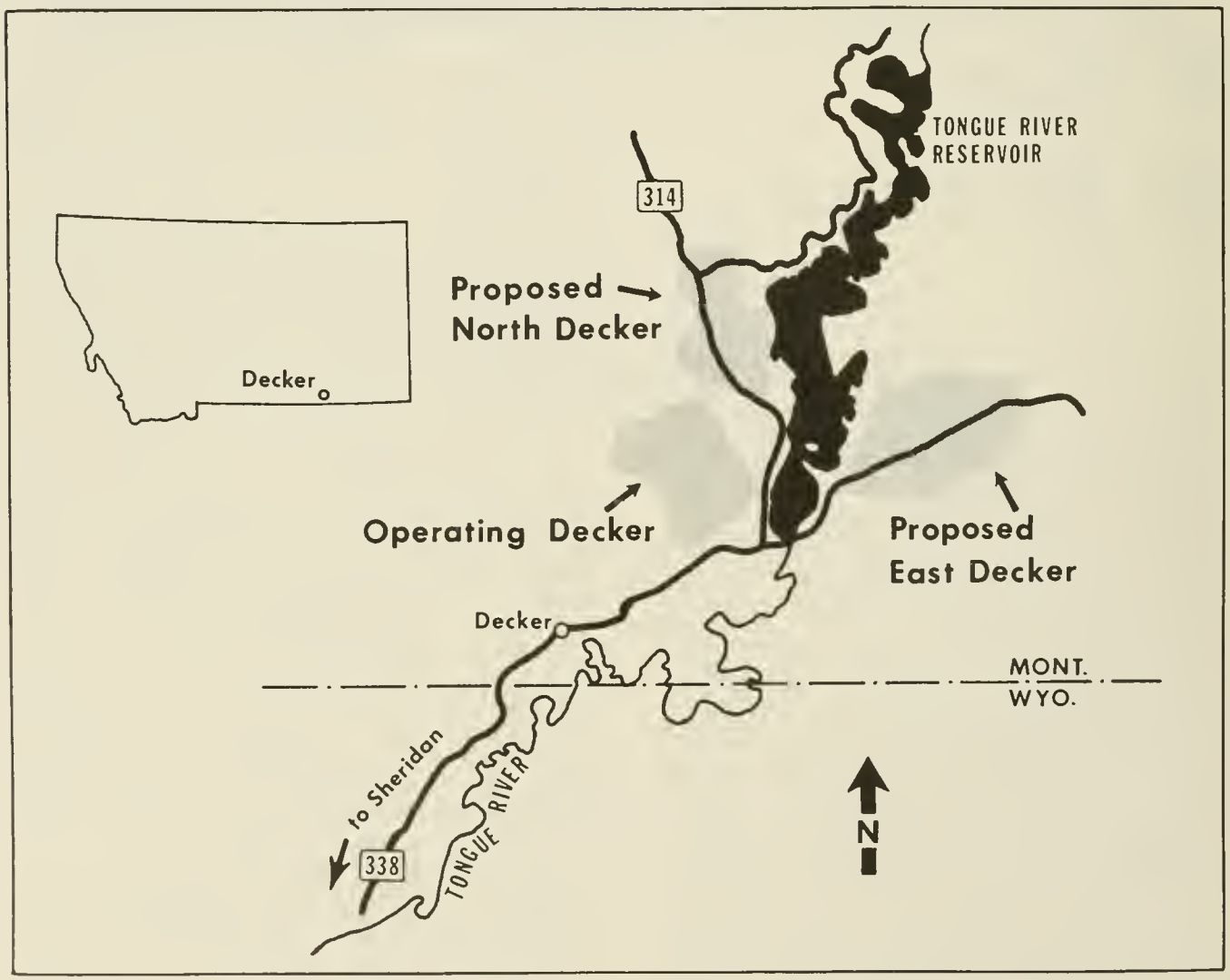
• **Fisheries**—Since strip mines will almost surround the Tongue River Reservoir, researchers are carefully monitoring and studying the impact of mining on water quality.

The studies are funded by the Old West Regional Commission and in part by the Environmental Protection Agency. The cooperative studies are being conducted by the Montana Dept. of Fish and Game and the Montana Cooperative Fishery Research Unit (MCFRU) at MSU. However, Decker is cooperating with researchers and considering the fishery in the mining plan. Also, the company provided some ranch buildings to house fishery workers and graduate students and built a laboratory for fish biologists and limnologists.

Decker hopes to contribute substantially in construction of a northern pike spawning marsh, and the U.S. Fish and Wildlife Service (FWS) is expected to commit research funds to this project through the MCFRU.

The northern is the top sport species in the reservoir. However, because the northern reproduces by laying its eggs on submerged vegetation in shallow water, natural reproduction has been nil since the river was impounded. The reservoir fluctuates and precludes reproduction by alternately flooding and dewatering the shallows, thus preventing establishment of vegetation. Thus, to maintain a northern pike fishery in the reservoir, pike must be planted each year.

If built, the water in the marsh will remain at the optimum level for successful reproduction. Water pumped from the strip pit will go into the marsh



after a short stay in a settling pond. Fishery workers will capture a few adult spawners from the reservoir each spring and release them into the marsh. After the eggs are laid, the adult northerns will return to the reservoir on their own. In about 10 days, the eggs will hatch and the young fry will be allowed to migrate through the marsh overflow gates and into the Tongue River Reservoir. By repeating this procedure each year, the reservoir hopefully will have enough small northerns to perpetuate its fine fishery.

Fishery researchers are also assessing the recreational potential of the reservoir. Even at this early date, it's obvious the reservoir represents a vastly *underused* resource—even though four state record fish have been caught here. "People just don't fish here," was how fisheries scientist Rich Gregory of the MCFRU put it.

• **Limnology**—Decker Coal Co. is also funding a complete limnology study to measure the chemical, physical and biological properties of the reservoir and nearby watershed. The expertise comes from MSU.

Right now, Project Director Gregory is conducting a four-year study to gather base line data. Then, water quality will be closely monitored during and after the two new mines become operational, if the state approves them.

• **Deer research**—This study, funded and conducted by the FWS, will tell the impact of mining on the local deer population. Although Decker didn't fund this project, company employes spend a considerable amount of time with trapping and tagging and are cooperating in other ways.

The study covers three areas—(1) a "control" area, the nearby CX Ranch, where deer habitat is not affected by mining, (2) the current mining operations in the Decker West mine and (3) the probable site of a future mine, Decker East. Biologists have already tagged 58 deer, 26 of these with radio transmitters so researchers can map movements.

Besides monitoring deer movement, researchers have initiated habitat studies and population trend surveys. Such information will be invaluable in lessening the impact of mining on deer.

In addition, Dept. of Fish and Game biologists have flown over the Decker area on a seasonal basis for the last two years. During the flights, biologists evaluated seasonal use of habitat and wildlife distribution. Results of this research will go into department recommendations on reclamation plantings for wildlife. The data will also be used to try to develop a mitigation plan for loss of habitat.

• **Sage grouse study**—Decker initiated and funded this project. Both the Dept. of Fish and Game and MSU participate and advise researchers on technical matters.

Researchers plan to locate nesting, wintering and brood rearing areas by banding sage grouse and, in some cases, attaching radio transmitters. Already 50-60 birds have been banded, 6 with radio tags.

Dr. Robert Eng of MSU's biology department set up the study. Also, Eng and department biologists, Steve Knapp and Bob Greene, did all the trapping and part of the work in locating wintering, nesting and brood rearing areas.

Researchers know where the all-important strutting ground lies—and that it will be mined in 10-15 years, according to Decker's mining plans. Will the sage grouse population establish another strutting ground? Will the birds return to this one after the draglines have moved on and the land has been reclaimed? Or will the grouse be eliminated? Time will tell.

• **Aerial big game census**—Decker employes fly over the area monthly to map distribution of big game animals. Again, it's vital to have this type of information prior to mining, so the impact can be assessed and, hopefully, lessened. For example, aerial surveys might find a critical area that should be avoided during mining.

• **Pellet analysis**—Decker employes analyze big game fecal deposits in an attempt to determine diets. Knowing big game feeding habits will help land reclaimers in determining which vegetative species to plant.

In addition to the above programs, Decker (1) conducts an intensive small mammal research project, (2) monitors great blue heron and cormorant rookeries, one osprey nest and waterfowl activities near the mine, (3) plans to build goose and duck nesting islands in the northern pike spawning marsh, (4) conducts a range ecology study that will benefit many of the other research programs and (5) cooperates with the FWS on passerine (songbird) and raptor (birds of prey) studies. (Department biologists also monitor the rookeries and Canada geese breeding pairs on the Tongue River and Tongue River Reservoir.)

Yes, this is a substantial commitment to protecting and restoring natural values—undoubtedly much more than most companies. But still, the all-important question—Is this enough?—remains unanswered.

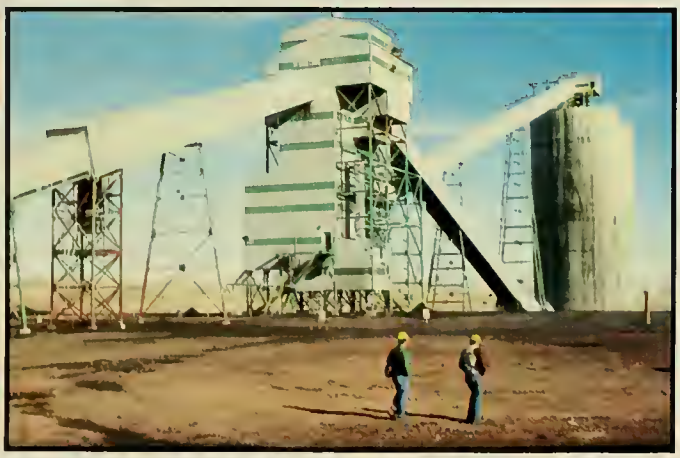
Scott is optimistic. He believes his company not only plans to thoroughly study the impact on the land and wildlife, but also—and equally important—wants to *apply* the results of these studies. Without working the research conclusions into the mining plan, the work is wasted.

This extra effort is helping to give Decker a "good guy" image in the public's eye. Such image-building can occur in two ways. First, companies can spend millions on Madison Avenue advertising, *telling* the nation the company is "concerned about the environment." Or second, they can funnel that money into sound research programs and then work the findings into the mining plan to assure the least possible damage to the environment. Decker chose the latter, according to Scott.

Unfortunately, this research at the present min-

continued

(above, top) At Decker, deer are captured and tagged so biologists can gather information necessary to learn about the impact of strip mining on this popular game animal (photo: Sam Scott). Researchers attach similar radio transmitters to sage grouse (directly above) and follow their movements (photo: Sam Scott). This is the 70-cubic-yard shovel (right) for Decker Coal Co.'s second dragline which is presently being assembled (F&G photo: Mike Aderhold).



(center) After the coal is removed, the spoils are graded, covered with topsoil and planted. Will this return a diverse, native vegetative cover so important to wildlife (F&G photo)? Decker's first dragline (left) removing overburden to expose the coal seam (photo: Sam Scott). Giant silos (directly above) store the coal until it's loaded onto trains headed for faraway markets (F&G photo: Mike Aderhold). In the strip pit (above, top), shovels chew away at the 52-foot coal seam (photo: Sam Scott).

ing operation started a little late. "Better late than never" applies here. But the fact remains that Scott wasn't hired until 1974 and most research didn't get off the ground until 1975, even though the mine opened in August 1972 and the company had planned it years before that. Preferably, this research data would be collected *before* the mine opens, and then carefully worked into the original mining plan. Apparently, this problem won't recur at Decker's two proposed mines since researchers are busy gathering information years in advance. This, like many research efforts at Decker, is required by new state laws and regulations.

Coincidentally, 1975 was also the year Decker became involved in two controversies that didn't do much for its image. The Northern Plains Resource Council (NPRC), an agriculturally based citizens' group, became concerned about the sodium content of the spoils at Decker. The NPRC claimed that the spoils contained harmful concentrations of sodium and thus, according to Montana's reclamation laws, should be buried at least eight feet.

However, Decker reclamation officials claimed this was unnecessary and, in fact, physically impossible. From here, the argument turned into a scientific debate over (1) how toxic sodium is and (2) how deeply it should be buried. As this goes into print, the issue is still unresolved.

The second controversy tarnishing Decker Coal Co.'s plans was a purported attempt to circumvent Montana's strip mining laws. Specifically, citizens complained about Decker's plans to construct a rail spur for Decker East, which has not been approved by the Dept. of State Lands. Critics claimed the company was circumventing the law by actually "opening a new strip mine" by making the first cuts for the strip pit to get fill material for the new rail spur.

Even Decker officials agree this criticism has had some foundation. However, Decker said the equipment had been ordered before Montana's 1973 strip mine reclamation law and it had to be taken to the site. As with the sodium question, this debate remains unresolved.

So that's the way it is at Decker. What does it all mean? Actually, one comes up with several conclusions.

- The company's efforts will most likely warrant the financial expense in the long run. Industry leaders in environmental research and dedication receive less public criticism than irresponsible companies.
- Although the company is displaying a good faith effort to protect the landscape, much of this concern was forced by strict environmental standards and public controversy. For example, Decker proposed dumping spoils into Deer Creek, a critical wildlife area. However, the Dept. of State Lands wouldn't allow it. Would Decker have initiated special concern for environmental quality *without* public furor, tough legislation and state regulation?
- Much of the research under way at Decker is funded with public money.
- Even with this seemingly extensive research, we still shouldn't be caught saying, "Well, I guess reclamation will work after all."

Strip mined land reclamation *may* be possible in the West. Decker officials are trying for successful reclamation. However, Decker has some of the poorest soil conditions among Montana strip mines. And low precipitation also hampers revegetation. Thus, many years must pass before one can definitively assess the success of reclamation efforts. Even if complete reclamation isn't possible, companies *presently mining* must do everything they can to put the landscape back together. But what about the companies applying for new mines?

- We *are* going ahead with strip mining *without knowing positively if the land's original productivity and diversity can be restored.* We are *trying* to do this. However, *if we can't,* we won't be able to go back and correct our mistake as thousands of acres will already be stripped.

Montana made the choice to go ahead with the existing mines without knowing if the land could be completely reclaimed. If total reclamation isn't possible, the mines should not receive state permits. But with existing mines, it will be too late if in 25 years we discover reclamation technology is inadequate.

We're involved in a game of chance without knowing the odds. Should we take the gamble?

- Even if land and wildlife can survive strip mining, they might not survive the wide selection of energy conversion facilities proposed for the northern Great Plains. A more far-reaching impact of energy development comes from these power plants and the people and "spin-off" developments they bring with them.

Certainly, one of the most rewarding aspects of a visit to Decker is looking up and *not* seeing a big smokestack on the horizon. The Decker area might have much of its natural integrity after the miners have finished, but natural systems could be permanently damaged by power plant development. For example, strip mining requires little water. However, energy conversion plants require extensive amounts.

Scott says Decker Coal Co. has no plans to construct power plants. All their coal goes to eastern and midwestern cities by rail. However, he worries about power plant development by other coal companies in the area. His fear appears founded as PP&L (which owns half interest in Decker Coal Co.) is already seriously considering an energy conversion complex just south of the Montana border in Wyoming.

- Even if Decker can control most environmental damage, what about the other companies with strip mines planned? Right now, there is the

possibility of about 10 strip mines along the Tongue River from Monarch, Wyo. to the Tongue River Dam, according to Scott. Will these companies share Decker's concern for wildlife, water quality and reclamation? What will the cumulative impact be?

• Decker Coal Co. can afford the expense of environmental protection. According to the State Dept. of Revenue, Decker received $5.88 per ton for its coal in 1975. The present mine produces about 85,000 tons per acre. By multiplying these two figures, we conclude that about $499,800 comes out of each acre. In 1975, Decker mined 92 acres, creating a gross income of $45,981,600. And plans call for doubling the current output.

Admittedly, a Decker-type strip mine is an expensive proposition. In 1975, Decker paid $11.3 million in state and local taxes, for example. Nonetheless, the budget seems to have plenty of room for a full environmental protection program.

Later that day, I was fortunate to visit Decker's dragline. Briefly, it's a giant earth-moving machine—larger than the house I live in—and requiring 2,500 volts to keep it going. It removes the "overburden"—the material overlaying the coal seam.

When I entered the dragline, an unusual, nervous feeling floated around my stomach. It was either a flashback of boyish enthusiasm or a rare sort of fright, or perhaps both. The noise, the powerful vibration, the movement of massive gears, cables thicker than my arm, chains so heavy I probably couldn't lift one link and sitting beside the dragline operator watching the enormous shovel chew away the landscape left me awe-stricken. And this was "baby" among draglines. There is one five times larger.

I had the distinct feeling that nobody could really comprehend strip mining or know what it meant for the West until he has been in the control booth of one of these giant draglines. In fact, I found it impossible to be optimistic about the impact of strip mining. Even after hearing in detail Decker's extensive efforts, I couldn't rationalize western strip mining.

I don't think it's inevitable, as many claim. But it's *here* nonetheless. So sincere efforts like those Sam Scott had shown me throughout that day are necessary. Without them, the economic and environmental catastrophe of Appalachia will surely repeat.

There *is* a demand for coal. Decker executives sell it many years before they dig it up. Thus, we have strip mines and giant draglines. But if America could only *really* conserve energy and blitz to develop alternative energy sources, we probably wouldn't need western strip mining. But we've faltered on both. Thus, we have mines opening one after the other.

Even more unfortunate, there is plenty of low sulfur coal out East. But for lack of sales, many mines are closing, as the coal industry moves to the West. Why? Because it's more profitable to mine western coal.

On the way back to Sheridan from my day at Decker, just south of the mine seven mule deer flitted across the road. Would technology spare them? I left Decker with that question unanswered.

WE THOUGHT YOU'D LIKE TO KNOW

If you've read the article, "A Day at Decker," you probably noticed that it departs from the magazine's normal editorial policy.

From time to time, we receive angry comments from development-oriented people. "Why don't you tell the other side for once?", they collectively criticize.

Well, we saw some good things happening at Decker, so we decided to give it a try. Instead of badmouthing Decker for "ripping off" prime wildlife habitat, we explained what the company was doing to help restore diverse animal and plant systems after mining.

Decker was plowing some new ground in researching the impact of strip mining on wildlife. And we wanted to make this known—for two reasons.

First, other companies might be encouraged to show more concern for wildlife. And second, we wanted to be positive due to Decker's "better than average" attempts.

On such complex subjects, we submit the article to an extensive professional review to assure accuracy. We send draft copies to selected individuals in our department, other agencies, citizens' groups and companies which have knowledge or experience with the topic.

At least in the review stage, our approach in the Decker article seemed to anger both sides instead of pleasing both sides. The criticism was invaluable in improving the article by clearing up some confusing and incomplete sections. But this is standard operating procedure with *Montana Outdoors* articles.

Such articles also seem to set off cross fires. Apparently, they offer a springboard for taking a shot at "the other side."

Claims of absurdity, dishonesty, incompetency, lack of foresight, loss of credibility, etc., to name a few, were leveled at us and "the other side." (There were others we couldn't print.) Even friends within the department disliked the article and wanted it killed. Decker Coal Co. felt we should have been more "positive" about its operation. And citizens' groups and state regulatory agencies thought we were "too favorable" to a company that really wasn't voluntarily protecting environmental quality.

Yes, we seriously considered *not* publishing it. But we decided to follow through anyway. We thought MO readers should have a say in the matter. So let's hear from you. —*Ed.*

SAGE GROUSE: AN ENDANGERED

photo Harry Engels

SPECIES?

by Rick Wallestad

Historians usually credit members of the Lewis and Clark Expedition as the first white men to observe sage grouse. They first encountered sage hens around the Marias River and referred to them as the "cock of the plains." Indian tribes were so impressed with their abundance in parts of Wyoming that they named a major river system in their honor. As late as 1840, the Green River was commonly

continued

called the "Seeds-ke-de-agie," or "Prairie Hen River."

Anyone who has observed the strutting ritual of a group of male sage grouse in early spring can understand why early taxonomists coined the scientific name of *Centrocercus urophasianus,* Latin for spiny-tailed pheasant.

Less than a century ago, sage grouse were considered the most numerous game bird in nine western states. Today, they are considered important only in parts of Idaho, Montana, Wyoming and Nevada. The decline can largely be attributed to one factor: agricultural encroachment on sage grouse habitat. White man has waged war against sagebrush since the first settlers carved their farms from the native prairies. Through the years, he has used a variety of techniques—burning, plowing, roto-beating, chaining, railing and spraying—to convert native sagebrush ranges to grasslands. Robert L. Patterson, in his book, "The Sage Grouse in Wyoming," pointed out sage grouse populations hadn't declined recently, but declines instead coincided with maximum livestock utilization from 1900-1915. It seems more than coincidental that states supporting the smallest human populations contain the most sagebrush and the largest sage grouse populations.

Is the sage grouse, North America's largest member of the grouse family, an endangered species? It is impossible to consider the sage grouse's future without first considering the future of its sagebrush ranges. Since the sage grouse has not adjusted to patterns of land use which eliminate or seriously disturb any of its seasonal ranges, its existence depends on man's ability and willingness to maintain vital habitat.

LIFE HISTORY

Sage grouse, commonly called "sage hens" or "sage chickens," are a unique and important game bird in Montana. No matter what these birds are called, their name usually includes "sage," denoting their dependence on sagebrush. Sage grouse do not possess a well-developed muscular gizzard like other game birds and therefore can't grind and digest seeds. Their year-round diet consists of leafy vegetation, but they take some insects during summer. Their fondness for grasshoppers in late summer makes them a favorite with ranchers.

During winter, sage grouse depend entirely on sagebrush for survival.

During winter, sage grouse depend entirely on sagebrush for survival. As an evergreen shrub, sagebrush provides food throughout the year, regardless of weather conditions. In spring, sage grouse supplement their diet of sagebrush with forbs (broad-leafed, nonwoody plants) as they green up. Chicks feed largely on forbs and insects; sagebrush does not form an important part of the juvenile diet until birds are about 12 weeks old.

As spring approaches, sage grouse thoughts turn from food to courtship and the large, drab bird undergoes a Jekyll-Hyde transformation and becomes one of the most beautiful birds on the prairie. Sage grouse males gather daily on traditional "strutting grounds" to perform an elaborate dance in an effort to attract a receptive hen.

Strutting grounds, probably the center of year-round sage grouse movements, are situated on natural clearings in the sagebrush. The number of males on a specific strutting ground varies, depending on the population size in a given year. However, most grounds have 10-20 males, but some with over 100 have been reported. Males are territorial—they return and defend the same piece of ground year after year.

During the early part of the breeding season, hens wander aimlessly around the grounds, often flying away before sunrise. They seem almost indifferent to the energetic strutting of the males. As the strutting season advances into April, hens gather in groups on the dominant males' territories. When a hen is ready to mate, she spreads her wings and crouches motionlessly on the ground. After mating, the hen flies from the strutting ground and begins a solitary existence that lasts through the nesting period.

The hen constructs her nest by scratching out a shallow depression, usually beneath a sagebrush plant or between two plants. She completes it by lining it with dead grass. Adult hens (at least two years old) lay an average of nine eggs per clutch while yearling hens average about seven. After a 26-day incubation, the eggs hatch and the fluffy chicks immediately feed on ants and other small insects.

In Montana, the earliest sage grouse broods can usually be spotted during the last week in May. However, the peak of the hatch usually occurs the second week in June.

Until broods are two to three weeks old, daily movements are quite restricted, even though chicks two weeks old can fly short distances. When important food plants such as dandelion, goatsbeard and prickly lettuce start to dry up on upland sagebrush ranges, broods move to moister sites. At this time of year, large groups of birds feed in alfalfa fields in early morning and late evening.

As forbs freeze in the fall and become unavailable, sage grouse return to their winter staple of sagebrush. During some years, this shift in diet occurs before or during the first part of the hunting season. By October, sage grouse gather into large flocks

on traditional wintering grounds. Size of the flocks varies from 20-200 or more, depending on snow depth.

Montana sage grouse are considered nonmigratory because they don't move long distances between seasonal ranges. In contrast, sage grouse populations in Idaho move 50-100 miles between summer and winter ranges because of snow conditions at higher elevations.

YELLOW WATER STUDY

In 1965, the Montana Dept. of Fish and Game, with the U.S. Bureau of Land Management, initiated a 10-year project in the Yellow Water Triangle of central Montana to study effects of chemical and mechanical sagebrush control on wildlife. During this period, 73 sage grouse were equipped with radio transmitters. Hopefully, the information gathered will answer questions such as: Where do sage grouse winter? What density of sagebrush do they require for winter cover? How far do hens travel from strutting grounds to nest? What density of sagebrush do they require for nesting? What do sage grouse eat at different times of the year? Findings will provide a guide to land managers in considering the needs of sage grouse during multiple-use management of sagebrush grasslands.

Some of the findings of the study show sagebrush becomes most critical during winter when birds gather in large flocks on small patches of dense sagebrush. Study results showed that during December, January and February, sagebrush was the *only* food found in 81 crops examined.

During winters with little snow cover, sagebrush may appear limitless, but the same ranges under 12 inches of snow are completely covered and offer no food or cover to sage grouse. Approximately 25,500 acres of sagebrush are available to sage grouse as winter range in the Yellow Water Triangle in a normal winter (snow under 10 inches deep). However, when snow is deeper than 12 inches, sage grouse are restricted to taller sagebrush stands on about 1,700 acres, or only 7% of the range available in a normal winter. In one area of the Triangle, if a certain 200-acre stand of dense sagebrush were destroyed, it could eliminate sage grouse from 40,000 acres of their range. Large expanses of dense sagebrush—covering 20 % or more of the ground—on level land characterize sage grouse winter ranges in this area.

Nesting cover must provide concealment. Nests situated in thicker sagebrush stands—those with over 20% ground cover—were significantly more successful than those in stands with less than 20% ground cover. The study also showed nesting habitat in eastern Montana was synonymous with sage grouse wintering habitat and therefore should be considered as a wintering/nesting complex. Chances are good that any management practice which benefits or destroys one will affect the other similarly.

The greatest distance a radioed hen in the Triangle traveled from a strutting ground to a nest was 5.7 miles. Of the radio-equipped hens, 68% nested within 1.5 miles of the strutting ground where they were captured. Some hens visited other grounds after they were tagged and they perhaps mated there. One hen visited at least three other grounds, but returned to nest within one mile of the area where she was captured.

In the Yellow Water Triangle, a popular spot to hunt sage grouse, under 5% of the sage grouse were harvested annually in spite of the 65-day season. Based on the high annual turnover (nature producing more animals than the habitat can support) of sage grouse, hunters can take 30% of the birds annually without affecting breeding populations. A banding study in the Triangle indicates 60% of the sage grouse population disappeared each year whether hunted or not. Management tries to replace natural mortality with birds in the bag and provide maximum sport hunting and recreation without depleting the breeding population.

HUNTING AND MANAGEMENT

Before 1870, there were no regulations on sage grouse hunting in Montana. Beginning that year, the season on native grouse was closed from March 1 through Aug. 15 of each year by the Montana Legislature. By 1877, the legislature had made sale of native game birds illegal. A daily bag limit of 20 native grouse was imposed by the legislature in 1897. In 1909, the daily bag limit was reduced to five birds and in 1939, further reduced to three. Length of the season was drastically reduced to three days in the thirties.

Less than a century ago, sage grouse were considered the most numerous game bird in nine western states.

Currently, most areas in Montana provide a sage grouse season of 65 days with a daily bag limit of four birds. During the last 14 years, Montana hunters harvested an average of 46,000 sage grouse per year and annually enjoyed about 90,000 hours of recreation. Hunting pressure on most birds in Montana is extremely light because of the abundant and diverse hunting opportunities. (Average harvest in a 10-year period was three birds per square mile.)

Montana hunters are like hunters everywhere—they enjoy opening day. Many hunters spend the opening weekend hun-

continued

Often the sage grouse's summer habitat (far left) is abundant and productive. But winter snows can bury the all-important sagebrush plants. Besides depending on sagebrush for food during winter, sage grouse also use it extensively for nesting. Biologists can see the significance of sagebrush to this excellent game bird, but some other specifics of the bird's behavior and habitat remain a mystery. To discover these details, researchers attach tags and/or radio transmitters to captured birds. Then, they release them and monitor their movements (F&G photos: Rick Wallestad, Mike Aderhold).

ting grouse and then hang up their shotguns and take down big game rifles. From 70-80% of the total bird harvest occurs during the first week of the season. Surveys show the total bird harvest in any year varies with opening day success and not season length.

Weather is a critical factor in determining opening day hunter success. Cold, wet or windy weather makes sage grouse extra wary and they frequently flush out of gun range. Also, wet conditions prevent access to many areas in eastern Montana. Hunters have better success when warm weather prevails and access is easy.

Sage grouse also scatter widely in years with adequate summer moisture. This reduces opening day success and the reduced harvest causes many hunters to complain, "There were no birds." In contrast, in summers with little moisture, birds congregate in large flocks around alfalfa fields and roadside ditches, resulting in good opening day success and a greater harvest.

Sage grouse populations fluctuate like all other wildlife populations. Biologists annually survey strutting grounds and brood areas to evaluate overall population trends. Wings collected at checking stations during the fall are examined to determine hatching dates and success of the hatch. Despite the apparent ups and downs in sage grouse populations, Montana maintains liberal sage grouse seasons because of (1) high annual turnover and (2) opening day variables. (Remember, total harvest varies with success on opening day, not with season length.)

HABITAT ALTERATION

Sagebrush control may not immediately or noticeably affect sage grouse, depending on the size of the area treated in relation to total available habitat. A 1964 Colorado study reported that a spray project which treated 1,700 acres of sagebrush minimally affected the sage grouse using the area. However, two years later an additional 1,300 acres were treated and the entire sage grouse population left the area.

Probably one of the best documented examples of the detrimental effects of sagebrush removal occurred in an isolated sage grouse population in Meagher County, Montana. A 49% decrease (11,808 acres) in sagebrush types, due to sagebrush spraying and conversion to cropland, eliminated sage grouse from five strutting grounds.

In the Yellow Water Triangle study, numbers of male sage grouse on three strutting grounds within one-half mile of a sprayed area increased by an average of 28% from pre- to post-treatment years. Because the population grew, it seemed sagebrush treatment had no detrimental effect on the grouse population. However, when compared with two control grounds in the same population, the effect became more pronounced. On the two grounds farther than two miles from sprayed areas, the number of males increased an average of 323% during the same period. Number of sage grouse observed on grounds within one-half mile of treated areas and those farther than two miles led to the conclusion that population differences were directly related to sagebrush spraying.

Destruction of habitat has clearly limited the distribution of sage grouse. Any factor or combination of factors which causes deterioration of native sagebrush ranges inhabited by sage grouse cannot help but be detrimental to this unique game bird. Spraying has already rendered approximately 10% of the sagebrush range in Montana unsuitable for sage grouse. But the *total* loss of sage grouse habitat is much greater because spray projects usually remove the densest and tallest sagebrush stands. When critical sage grouse wintering, nesting and breeding areas are destroyed, the region's total capacity to support sage grouse is decreased. If size of the area or percentage of suitable habitat treated is large enough, entire populations can be eliminated.

The sage grouse decline can largely be attributed to one factor: agricultural encroachment on vital habitat.

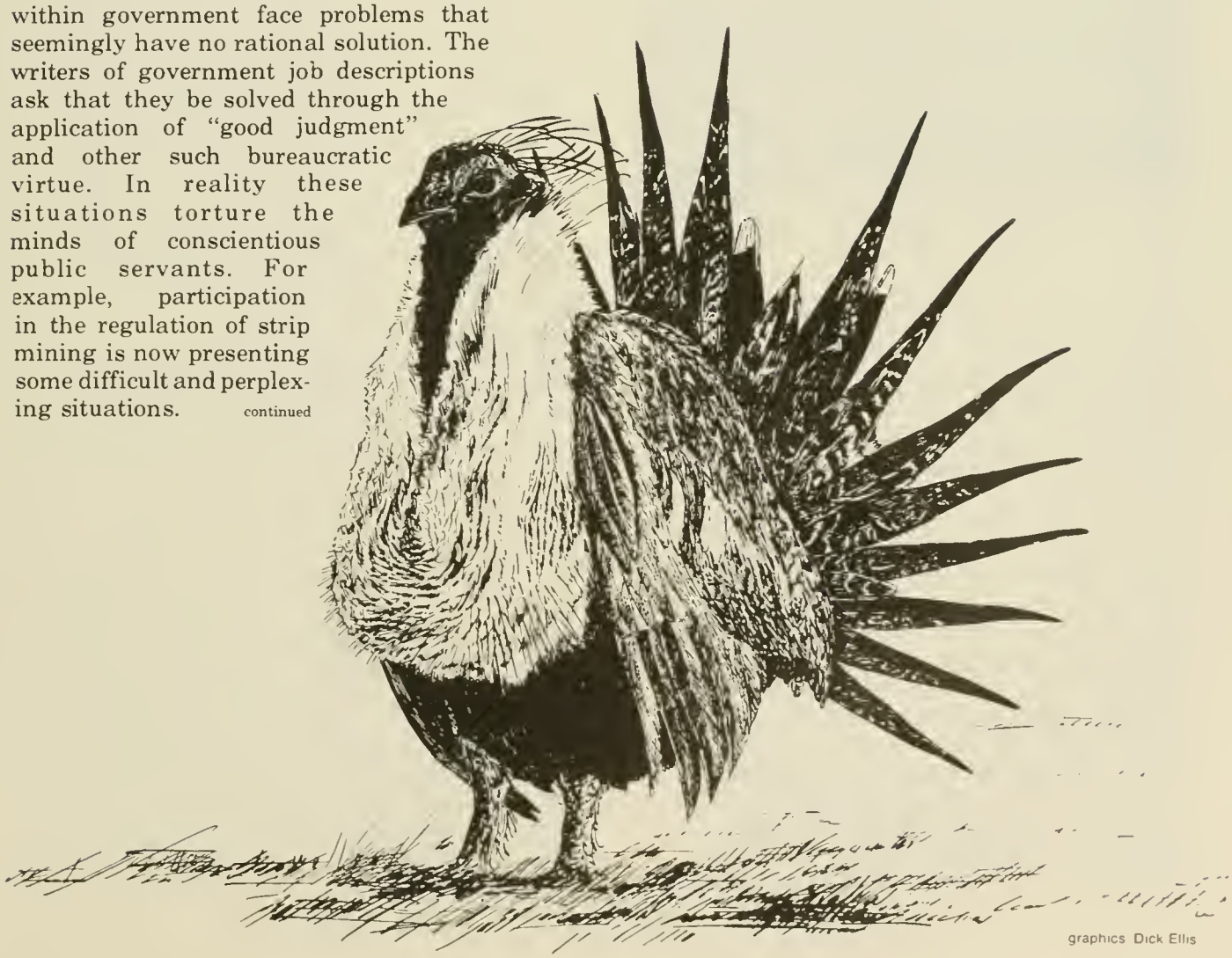
The value of sagebrush varies, depending on whom you talk to. Many agriculturists consider sagebrush nothing more than a noxious weed, while conservationists consider it one of the most valuable wildlife food plants in the western U.S. Some range managers claim they can raise more grass and therefore more cattle on ranges free of sagebrush. Wildlife managers claim sage grouse, antelope and mule deer will disappear with sagebrush removal. Future generations will judge the results of this controversy.

Meanwhile, the plowing and spraying of sagebrush on private rangelands continues. But on public rangelands, it could be quite a different story. The multiple use acts passed by Congress in the early 1960s state that land management does not necessarily have to be based on total economic return, but rather on the overall public welfare. These acts went a long way toward establishing the criteria for consideration of wildlife on public rangelands. If man is willing to maintain vital habitat, future generations can continue to enjoy our native wildlife. But future economic decisions on such lands must continue to be tempered with consideration for wildlife.

editorial

# of sage grouse and overburden

From time to time individuals working within government face problems that seemingly have no rational solution. The writers of government job descriptions ask that they be solved through the application of "good judgment" and other such bureaucratic virtue. In reality these situations torture the minds of conscientious public servants. For example, participation in the regulation of strip mining is now presenting some difficult and perplexing situations. continued



graphics Dick Ellis

Montana reclamation law has a provision in its section 9 for denying a strip mine in any given area when the area is, among other things, "ecologically important" or "ecologically fragile." Administrators of the law and other agencies like the Dept. of Fish and Game working with them, now struggle with the reality of making the law work as intended.

Montana is a land blessed with quiet, obscure corners. It is a land twice-blessed, for in this obscurity still beats the natural rhythm of life in our varied wildlife populations.

Sage grouse strutting ground on the proposed site of one of Decker Coal Co.'s new strip mines (F&G photo)

In a broad swale east of the Tongue River the annual ritual of mating sage grouse is fulfilled each spring. In 1976, as it has been back into time, time measured in seasons, in generations of wildlife, in dry cycles and wet, in the passing of tribes and perhaps yet in the passing of man, the annual ritual continued. In the gray dawn, the strutting males, vying for a few passive females, puffed and boomed and stamped with wisps of dust stirring beneath their shuffling feet. When the dust sifted back to earth, it settled on, among other things, tons and tons of strippable coal. The settling dust and the birds that stirred it are in essence "overburden." While applications for coal mines are pending, the grouse assemble and perform their ritual, not for us, but for one another and the perpetuation of their species.

The place they use was selected by their ancestors. It was to be passed on to their descendants. It is "their" place; it may be without option. It is related to the land and its condition; it is related to both the past and to the future. It is now related to the coal lying beneath it.

What to do? We can study the birds "to see what happens." Yet, I suspect we know what will happen. There is the hope that they will somehow relocate and be accommodated in reclamation and we cling to that thread. We will study, keeping occupied while it occurs and report it with scientific precision. But for the grouse, it may well be finished.

We can talk hopefully of relocation, talk of reclaimed land, talk of compensation, talk. But for them, the grouse, it may well be silent. No more excitement of the strutting ground, no cautious seclusion of incubation, no scolding, alarm and assembly call of brooding females. No patient endurance of winter, no anticipation of spring.

Write them off. It seems the rational thing to do. The coal reserves are millions of tons, perhaps a billion, and the grouse an obscure handful. Surely, we will be forgiven and perhaps the sportsmen will understand, but then, it is not a matter you share with other men; the matter is between you and the strutting grouse. Their voice does not carry, the sound does not travel far . . . perhaps to the section line . . . perhaps to the mine boundary, but even if carried on the wind, surely not to Helena. It also is well to remember there is no sound unless there is an ear to hear it.

Quiet sounds cannot be heard in places where men talk of energy crises, trade offs, balance of payments, national commitment and needs of a nation. Men who talk and write and plan, reaching out with written words and detailed plans and doing what surely must be done. Reaching out and cutting the fragile bond between grouse and land. A bond reaching into the past for generation upon generation until it dims in our imagination. A bond from today to yesterday, to the homestead to Custer to the Indian alone and perhaps beyond. Now it is to be severed with a mark of approval, a signature and nodding agreement that it was the only reasonable thing to do. And now it is finished.

Another strand in our woven web of wildlife is severed and there may be no way to mend it.

The burden of all this is too much for public servants to bear alone . . . now you share it. — *Jim Posewitz*

For Good Nutrition...

While shoppers bemoan the climbing costs of a Sunday dinner, nutritionists warn consumers that the quality of much of the protein Americans eat is not very high. That's where bringing home the results from a successful hunting or fishing trip come in.

Game meat and fish supply protein that not only equals the quality and quantity of domestic sources but, in many cases, surpasses it. Drawing comparisons is difficult, however, because information on the nutritive values of wild game is scarce.

A rough estimate from the U.S. Dept. of Agriculture indicates beef contains four times the amount of fat as wild meat, and pork five times as much. That's good news for those who must watch their intake of animal fat. Also, the vitamin and mineral content of wild game and fish is much higher.

To illustrate, let's compare approximately the same-sized beef T-bone steak and a venison steak, both weighing about 3-½ ounces and both broiled. The beef steak contains 235 calories to the venison's 201. The beef contains 24 grams of protein; the venison, 33.5. The beef has 14.7 grams of fat, but the venison has only 6.4. The venison also contains higher amounts of calcium, phosphorus and iron and it has no artificial growth hormones, dyes or flavor enhancers.

Another comparison underlines the facts. This time let's compare a portion of wild duck with domestic duck. Each portion weighs 3-½ ounces (raw). The domestic duck contains 326 calories, compared with 232 for the wild duck. The domestic duck has 16 grams of protein, while the wild duck has 21.1. Once again, a substantial difference exists in fat content: The domestic source contains 28.6 grams; the wild duck, only 15.8 grams. The wild fowl also contains higher amounts of phosphorus and iron, but less calcium.

Although comparing a broiler chicken with a pheasant might not be strictly an across-the-board proposition, it does support our contention. A 3-½-ounce serving (raw) of each tallies 151 calories. But the protein content of the pheasant is 24.3 grams; the chicken, 20.2 grams. The pheasant provides only 5.2 grams of fat, while the chicken provides 7.2. Each has the same

continued

Try A "Wild" Alternative

by Kay Ellerhoff

recycled paper

amount of calcium, but the pheasant has more phosphorus and iron.

Fish is an excellent source of protein, vitamins and minerals—and it's a weight watchers' boon because the fat content is so low. Northern and walleye pike offer one of the very best deals. A 3-½-ounce serving of northern pike (raw) contains 18.3 grams of protein, but only 1.1 grams of fat and a scant 88 calories. Walleye pike is almost as desirable. The same-sized serving contains only 1.2 grams of fat and 93 calories, while offering the lucky diner 19.3 grams of protein. (Obviously, the cooking method can throw the calorie counter way off. If you're watching the numbers, broil, don't fry.)

There is little argument over the nutritional importance of protein, even from vegetarians. Protein is the master nutrient; beside its other functions in your body's intricate chemistry, it's what you're made of. Children require protein to grow. Adults need it to keep going, to replace dying cells, to keep hair and fingernails growing. Some nutrients can be stored in the body, but not protein. It must come from your daily intake of food.

You're probably saying, "I'm glad to know that what I bag or creel is so healthy, but how much protein do *I need* every day?" A simple formula is presented in "The Vital Ingredient in Your Diet," in the July 1972 *McCall's*. Adults should have about ½ gram of protein per pound of body weight. For example, if you weigh 120 pounds, you would require 60 grams per day. If you weigh 160 pounds, you should take in about 80 grams, etc. Infants require more—2-3 grams per pound of body weight and growing children, 1-½-2 grams. Many other factors influence your protein need—your sex, if you're a pregnant woman or nursing a baby, if you have special dietary requirements or participate in strenuous athletics. So the formula is only a *rough* estimate. (Space limits a discussion of daily requirements of the other nutrients, vitamins and minerals, but most nutrition and health care books can provide the necessary information.)

The point we want to underscore is steaks and pork chops aren't the only source of protein—or, to a dedicated sportsman, necessarily even the best tasting. Experimenting with some "wild" alternatives may save some money, change some food preferences—and improve your health.

C(

food	quantity	calories	(gms) protein	(gms fat
MEAT—DOMESTIC				
bacon, fried	3 strips (3 oz. raw)	147	5.4	13.5
hamburger, fried	1 patty (4 oz. raw), 3" diam., 1" thick	224	21.8	14.5
beef, rib roast, cooked	2 slices (8 oz. raw)	302	28.4	6.7
beef, T-bone steak, broiled	3.32 oz.	235	24	14.7
ham, fresh, cooked	2 slices (8 oz. raw)	254	39.6	9.4
ham, canned, boneless	1 slice (3 oz.)	142	15.7	8.5
lamb, loin chop, cooked	1 chop (4 oz. raw)	103	12.5	5.5
pork, loin chop, cooked	1 chop (6 oz. raw)	314	25.9	22.5
veal, loin chop, cooked	1 chop (8 oz. raw)	514	27.6	43.8
MEAT—GAME				
beaver	3-½ oz. (raw)	408	14.3	39
black bear	3-½ oz. (raw)	148	18.6	8.2
moose	3-½ oz. (raw)	123	25.1	2.5
muskrat, baked	3-½ oz.	154	27.2	4.2
rabbit, wild	3-½ oz. (raw)	124	21.4	3.6
squirrel, ground	3-½ oz. (raw)	115	10.1	3.8
venison, roast, cooked	3-½ oz.	146	29.5	2.2
venison, steak, broiled	3-½ oz.	201	33.5	6.4
FOWL—DOMESTIC				
chicken, broiler	3-½ oz. (raw)	151	20.2	7.2
duck	3-½ oz. (raw)	326	16	28.6
goose	3-½ oz. (raw)	322	28.1	22.4
rabbit	3-½ oz. (raw)	159	20.4	6.1
turkey, roasted	3-½ oz.	200	30.9	(7.6)
FOWL—GAME				
duck	3-½ oz. (raw)	232	21.1	15.8
goose, Canada	3-½ oz. (raw)	——	——	——
pheasant	3-½ oz. (raw)	151	24.3	5.2
quail	3-½ oz. (raw)	168	25	6.8
FISH—RAW				
bass, smallmouth or largemouth	3-½ oz.	104	18.9	2.6
burbot (ling)	3-½ oz.	82	17.4	.9
catfish	3-½ oz.	103	17.6	3.1
crappie, white	3-½ oz.	79	16.8	.8
Dolly Varden	3-½ oz.	144	19.9	6.5
perch, yellow	3-½ oz.	91	19.5	.9
pike, northern	3-½ oz.	88	18.3	1.1
pike, walleye	3-½ oz.	93	19.3	1.2
salmon, Chinook	3-½ oz.	222	19.1	15.6
trout, brook	3-½ oz.	101	19.2	2.1
trout, lake	3-½ oz.	241	14.3	19.9
trout, rainbow	3-½ oz.	195	21.5	11.4
whitefish, lake	3-½ oz.	155	18.9	8.2

Where possible, cooking method has been given. When the product is cooked, the raw weight is included in parentheses. Within the table, a dash —— indicates sparseness of

recycled paper

MPARATIVE NUTRITIVE VALUES

(mg) sodium	(mg) potassium	(mg) calcium	(mg) magnesium	(mg) phosphorus	(mg) iron	(mcg) thiamine	(mcg) riboflavin	(mg) niacin	(I.U.) Vit. A
250	56	4	4.9	66	.6	137	65	1.0	(0)
(40)	382	6	18	187	——	136	153	4.8	(0)
57	438	8	24	217	3.5	64	223	4.2	(0)
49	378	10	19	172	3.6	95	114	5.8	(0)
73	520	7	30	295	2.5	694	326	5.4	(0)
837	——	——	——	——	——	——	——	——	——
37	218	4	11	98	1.4	95	149	3.6	(0)
52	500	10	19	202	3.9	1,038	167	4.8	(0)
54	384	7	20	228	3.5	170	258	5.8	(0)
——	——	15	——	262	5.9	61	310	1.9	176
——	——	3	——	139	6.1	160	680	3.2	261
——	——	10	——	219	2.7	74	27	5	650
——	——	25	——	220	7.6	160	210	6.2	2,820
——	——	12	——	226	3.2	30	60	6.5	——
——	——	2	——	168	4.5	95	372	6.2	220
——	——	20	——	264	3.5	370	280	7.4	——
——	——	29	——	286	7.8	——	——	——	——
78	320	14	——	200	1.5	80	160	10.2	(0)
82	285	15	——	188	1.8	100	240	5.6	(0)
——	——	10	——	265	4.6	——	——	——	(0)
40	385	——	——	——	——	——	——	——	——
——	——	30	——	400	5.1	81	173	9.8	0-20
——	——	12	——	200	3	——	——	——	(0)
——	——	——	——	312	5.6	28	46	9.3	——
——	——	14	——	262	3.7	——	——	——	——
40	175	15	——	270	3.8	——	——	——	——
——	——	——	——	192	——	100	30	2.1	——
——	——	——	——	190	——	390	140	1.5	——
60	330	——	——	——	.4	40	30	1.7	——
——	——	——	——	——	——	tr.	30	1.4	——
——	——	——	——	——	——	60	60	——	——
68	230	——	——	180	.6	60	170	1.7	——
——	——	——	——	——	——	——	——	——	——
51	319	——	——	214	.4	250	160	2.3	——
45	399	——	——	301	——	100	230	——	310
——	——	——	——	266	——	——	70	——	——
——	——	——	——	——	——	——	——	——	——
——	——	——	——	——	——	80	200	8.4	——
52	299	——	——	270	.4	140	120	3	2,260

reliable information; tentative values are indicated by parentheses ( ). Abbreviations used include: gms—grams, mg—milligrams, mcg—micrograms, I.U.—international units. Data were taken from "Food Values of Portions Commonly Used," 11th edition, revised by Charles F. and Helen Nichols Church.

recycled paper

Good Landowner/Sportsman Relations - are they possible?

by Harley Yeager

While numbers of hunters and fishermen in Montana have drastically increased over the years, the amount of private land open to these sportsmen has decreased. Landowner/sportsman conflict is the reason most often cited for these closures. If this is true, can the trend be reversed or even stopped?

Approximately 5,000 persons purchased hunting or fishing licenses in the Treasure State during 1901, the first year licenses were sold. How many people fished or hunted without a license is not known. However, based on a 1901 human population of 250,000 and later statistics which indicate one license is sold for every three residents, approximately 83,000 persons hunted or fished—apparently most without licenses. Since Montana's total area is 147,138 square miles, hunter and fisherman density for 1901 was .56 persons per square mile. This figure assumes the entire state was open to sportsmen, and for the most part, it probably was. However, large chunks of Montana contained little, if any, game in 1901, so hunters concentrated in the better game areas.

Sales for the May 1, 1974-April 30, 1975 license year—the latest year for which information is available—show 376,694 individual sportsmen bought licenses. However, in this day and age, not all license holders make it out into the field to hunt or fish. But then, not all fishermen and hunters buy licenses either. For example, children under 15 need no license to fish in Montana. In this article, however, 376,694 sportsmen will be used as the total individual hunters and/or fishermen in the field during the 1974-75 license year. Consequently, hunter and fisherman density was 2.56 persons per square mile—or 4½ times higher than 1901. The fact that much private land is closed to the sportsman further complicates landowner/sportsman relations.

Fifty-seven per cent of Montana's total area is private—83,868.66 square miles. A questionnaire sent to geographically selected lessees of state trust land (school trust) by the Research Division of the Montana Legislative Council shows that 131 (78.4%) of 167 lessees responding allowed recreational use of their private land. According to data compiled by the Planning Division of the Montana Dept. of Fish and Game, only 68% of Montana's private and school trust land containing deer is open to mule deer hunting, while 64% is open to white-tailed deer hunting. (Research for this article indicates about 75% of the private land in Montana is open to sportsmen. Using that figure, 62,-901.5 square miles of Montana's private land is open to hunting and/or fishing.)

Approximately 7,327 square miles of state trust land exists in Montana. In nearly all cases, the lessee has the prerogative of allowing the public to use this land. Questionnaire results previously mentioned show 140 (84.3%) of 166 lessees responding allowed recreational use of their leased state trust land. Using the 84.3% for all state trust land results in about 6,177 square miles open to sportsmen statewide. Another 2,200 square miles of state land is administered by other state agencies. Of this, 972 square miles (44.2%) is open to sportsmen.

Excluding national parks, Montana's public lands comprise 41,737 square miles. These lands are mainly national forests or Bureau of Land Management or U.S. Fish and Wildlife Service holdings. Some is

recycled paper

inaccessible because it is isolated by private land without legal access. Because nobody knows how much public land is inaccessible to sportsmen, all 41, 737 square miles will be considered open. When private, state and public lands open to sportsmen are added together, 111,787.5 square miles is available to hunters and fishermen. Thus, a realistic figure for sportsman density is 3.37 persons per square mile. However, not all areas open to sportsmen contain fish and game habitat. If only land with fish and game habitat is considered, this could increase the density to 4 or perhaps 5 persons per square mile. And the most popular areas probably receive greater use than 5 persons per square mile per day. But the more these high sportsman densities occur on private land, the greater the potential for landowner/sportsman conflict.

Extreme mobility of sportsmen also strains landowner/sportsman relations. Many sportsmen use four-wheeled drive or other vehicles to traverse backcountry areas once they reach their destination. (See "Four-Wheeled Hunters," *Montana Outdoors*, Nov./Dec. 1972.) In spite of Montana's off-road vehicle law, some hunters still drive their vehicles with apparent disregard for the feelings and rights of private landowners. (See inset.) Hunters aren't the only offenders, even though the off-road vehicle law applies only to bird and animal hunters.

With increased leisure, hunting and fishing occupy much of a sportsman's free time. So sportsmen return to their favorite spots—which may lie on private land—several times a season.

When does the landowner become fed up with sportsmen? J. S. Brenner, former state senator (R-Grant) and past president of the Montana Stockgrowers Assn., seemed to answer the question at the 1956 Montana Wildlife Federation's annual meeting: "A lot of ranchers have been bumped in a lot of ways, not only in competition for feed, but by sportsmen. When you go out to hunt or fish and have trouble with a rancher, usually the most that is at stake is your day's recreation. But when a rancher has trouble caused by hunting or fishing on his place, it is destruction to his property, it is fire, or loss of livestock, or open gates or broken fences that can cost days of expensive labor. It often makes a man feel as if he is fighting for his very existence, and a man in that frame of mind can be downright unreasonable," Brenner concluded.

Writing in the Sept./Oct. 1974 *Montana Outdoors*, Mike Aderhold, the department's information officer for the Glasgow region, sums up the economic relationship of wildlife to the landowner: "Obviously, if wildlife and hunters interfere with economic production of the land, the landowner becomes concerned." Aderhold notes the value of what the private landowner gives up to benefit wildlife increases as taxes and the price of his product rise.

This author believes an agricultural landowner, already hard pressed to scratch a living from the land, is unlikely to continue tolerating sportsmen if they cause him an unrecoverable economic loss.

If economics is the key to keeping private land open to sportsmen, then how can the landowner be compensated? According to Aderhold, some landowners accept the sight, sound and presence of wild animals as payment. These are landowners who still welcome sportsmen on their land without direct compensation, except an occasional "thank you" from a courteous sportsman. Other landowners post their land. Some allow a few select friends on their property. A few landowners control hunters and fishermen by issuing special permits or requiring sportsmen to sign in.

When this author asked a Stillwater County landowner why he charged a trespass fee, his reply was to recover the cost of hiring an extra man to control sportsmen. The landowner said this arrangement allowed him to continue normal ranch operations. (For a review of landowner liability connected with charging fees, see Aderhold's previously referred to article.) In some areas of the state, paid hunting has gone beyond merely attempting to recover economic losses.

In eastern Montana, some landowners make a seasonal business of paid hunting by obtaining outfitters' licenses and guiding sportsmen. In some cases, landowners lease their land to outfitters for commercial sporting purposes. This activity is a sore spot with nearly all Montana hunters and some landowners contacted by this author. Yet, a few sportsmen accept it and pay the price, perhaps because they can't find any other place to hunt in a particular hunting district. Some hunters feel it's acceptable because they don't need to waste time finding a place to hunt.

How can the economic burden of sportsmen on landowners be reduced? The 135,000-acre Square Butte Management Area of north central Montana is one example. An agreement worked out in 1972 between landowners and the Montana Fish and Game Commission allows hunter use of private lands without asking permission. Hunters park their vehicles in designated areas and walk or ride horses to reduce the impact of off-road vehicles. Department personnel place signs designating the areas. The Square Butte Management Area allows landowners to continue normal operations without spending the entire hunting season controlling hunters or hiring extra men. The department has established similar programs in other areas of the state.

If landowners want to retain direct control of sportsmen entering their property, alternative plans are available. Regional department offices can supply landowners with small signs and recreation permit booklets. A permit very popular with landowners in north central Montana lists rules the user must follow. The permit contains blank spaces so the landowner can include specific rules for his property.

Does posting end the private landowner's problems with sportsmen? A few so-called sportsmen pay no attention to "no trespassing" signs and go wherever they please. Some sportsmen become highly irritated with landowners when a rash of "no trespassing" signs dot the landscape. Sometimes, this irritation leads to vandalizing private

VEHICLE TRAVEL RESTRICTIONS

Hunters must remain on established roads or trails except to retrieve big game carcasses that would otherwise be difficult to obtain. In a difficult situation, the hunter may use a motor-driven vehicle to retrieve the carcasses, except in areas where more restrictive regulations apply or where the landowner has not granted such permission. Those driving vehicles retrieving game must take the shortest possible route to and from established roads or trails.

recycled paper

property. Landowners often retaliate by closing more land. Adjacent landowners, not vandalized but sympathetic to their neighbor, close their land. On the other hand, where landowners allow hunting under controlled conditions, better landowner/sportsman conditions prevail. The more sportsmen each landowner tolerates, the better the sportsmen are distributed. This lessens the burden on each landowner who allows hunting and fishing.

Sportsmen exercising courtesy, consideration and common sense while hunting and fishing would greatly reduce landowner/sportsman conflicts. A simple thing like asking permission to hunt or fish before the morning of opening day makes good sense—don't wake the landowner and expect positive results. Yet, how many sportsmen practice this? A good rule of thumb for sportsmen to follow is: Before you do anything on private land, think about what your reaction would be if you were the landowner.

Hunters and fishermen who take time to thank landowners in person or by mail establish good relationships. *It's the sportsman's obligation to be sensitive to the landowner's wishes and feelings.* This obligation includes carrying a trash bag for policing up after sloppy sportsmen. If one sportsman observes another misusing private property (or any property), it's his duty to inform the offender he's contributing to the deterioration of landowner/sportsman relations.

Sportsmen can record violations they observe in information record booklets available from regional department offices. As soon as possible, the information should be given to a game warden.

Big game hunters can reduce pressure on private land by trying to bag their animal the first time out. Bothering a landowner weekend after weekend—during the season when other hunters are likely to be using his land—does not show much consideration. Even though the consequences of an individual's acts on private land may seem insignificant, add them together with what other sportsmen do and the situation may be intolerable to the landowner.

What is the Dept. of Fish and Game doing to keep private land open to sportsmen? The department purchases game ranges, hunting and fishing areas and access corridors to lessen the burden on private landowners. However, because funds are limited and Montana is big, this program can't eliminate all problems with landowners. The department plans to expand special management areas such as Square Butte and implement new units whenever possible. These programs require considerable time to establish and maintain and department personnel must provide the necessary manpower. Funds from sale of the Montana sportsman's license have financed litter bags (jointly with the Montana Stockgrowers Assn.), signs, recreation permit booklets and other programs for improving relations between landowners and sportsmen.

Simple acts of courtesy and common sense, like closing gates after you use them and asking permission at a convenient time for the rancher, tell the landowner that sportsmen respect him and his property (F&G photos: Craig Sharpe, Tom Warren).

For fiscal 1977, the Fish and Game Commission authorized an additional $40,000 (above the $40,000 currently allocated) to the Dept. of Livestock for predator control. The commission feels strongly that this action will assist in controlling predators which affect wildlife populations. In addition, hopefully the contribution will help keep private land open to sportsmen.

Also, payments in lieu of taxes, but in the same amount as paid by private landowners, are made to counties where fishing access or game areas have been purchased. In 1975, these payments totaled $58,117.

Youthful Montana sportsmen learn good landowner/sportsman relations through hunter safety education. Fish and game personnel emphasize this subject at sportsmen's clubs and meetings of civic groups and other organizations. The department recognizes contributions of private landowners in radio and television programs and through newspaper and magazine articles. A "Landowner of the Year" is annually selected by personnel in each of the department's seven regions and recognized during National Hunting and Fishing Day.

The department is attempting to lessen the hunter's impact on the landowner by implementing techniques which reduce hunter concentrations and more equitably distribute hunter pressure throughout a hunting district. These techniques include modifications in hunting district boundaries, big game season structures and bag limits.

Whether good relationships between landowners and sportsmen are possible depends on the attitudes and actions of both. Private landowners can only be made aware of the importance of their lands to sportsmen for hunting and fishing. If sportsmen expect landowners to greet them with open arms, then each hunter and fisherman must individually establish a good and lasting rapport with the landowner. Understanding and cooperation of both landowners and sportsmen are essential if department programs aimed at improving relationships are to succeed.

recycled paper

editorial

"grizzly"–don't waste your money

It must be disheartening being a film maker with insufficient wit to think up your own movie plots—or worse, being unable to do an acceptable job copying someone else's idea.

First came "Jaws," perhaps the largest financial success in the history of the movie industry. Producers must fall over each other to get on the coattails of a winner like this.

American International Pictures (AIP) took the lead in this scramble and started working on "Claws," a sequel to "Jaws," about a rampaging grizzly bear in a national park. AIP was just getting its act together when along came an independent movie maker, Film Ventures International, and forged ahead in the race to exploit a profitable plan. Beaten, AIP dropped "Claws." Film Ventures International had the same story as AIP, only a different title—"Grizzly."

I suppose it's not uncommon for producers to exploit a money-making scheme. I only hope it's uncommon for film makers to do such an unprofessional and incompetent job of presenting the relationship between man and nature.

Knowing a thing or two about grizzlies, it seeems fairly obvious how "Grizzly" was conceived and written. First came the idea—let's cash in on the "Jaws" theme. After all, sharks and grizzly bears strike similar notes in many minds. Both animals are large, unknown, fierce, uncommon and unpredictable. And even "better," both have been known to kill and eat humans. With "Jaws" still fattening pocketbooks everywhere, how could a sequel about the shark's terrestrial counterpart miss?

The script writers apparently hurried through two books on the subject—"Grizzly Country" by Andy Russell and "The Night of the Grizzlies" by Jack Olsen. The writers closely patterned their script after the "Jaws" theme, leaning heavily on Olsen's book about the death of two young women in Glacier National Park in 1967. They also borrowed a few lines from Russell's book—but none of the facts. Biological facts always get in the way of a story like this.

The movie opens with the rogue grizzly killing two young women. Then, with as much gore as possible, the rampaging goes on from killing to killing, giving the viewer the idea he's seeing instant replays. This incorrectly casts the grizzly as a vicious, bloodthirsty beast.

As in "Jaws" where the Chamber of Commerce wouldn't close the beach, the park superintendent (with his eye on a plush Washington job) refuses to close the park. Instead, he tells Kelly, the movie's star ranger, to "take care of the bear." I can't understand this, Ranger Kelly muses, "we tagged every bear and moved them to the high country where they have plenty of berries and fish."

Scotty, "the naturalist," can't understand either—especially since he "knows every bear in that forest personally." And this is a *big* grizzly—at least 15 feet tall and weighing over 2,000 pounds—he concludes after observing tracks and claw marks on trees. (The movie's press releases bill it as "18 feet of gut-crunching, man-eating terror.")

A grizzly this big is a biological impossibility in the wild, of course, but those minor details quickly fall to the wayside, just like the arms and heads of "Grizzly's" victims. Never mind that there has *never* been a wild grizzly population in Georgia where the movie was filmed. Never mind that grizzlies very rarely attack humans. Never mind that grizzlies eat mostly plants, only occasionally eating meat—and most of that carrion. I guess a 600-pound root-eater wouldn't make much of a movie. Neither would a fish-eating shark. So the producer throws out these truths about the bear's diet and behavior. They ruin the story. Instead, the script reads "strictly carnivorous . . . these things . . . they love meat."

Sitting out in the woods hoping to get a shot at "Grizzly," one of the cast of characters tells how a local Indian tribe was once laid up with "the pox." Then, "a whole herd of man-eating grizzlies" moved into camp, wiping out the entire tribe. Even this yarn was borrowed. Russell detailed this Indian *legend* in his book, but of course he never tried to pass it off as fact. The only thing original about "Grizzly" is its high degree of incompetence.

Yes, it's a lousy movie. So what, you might ask. There are lots of bad films. But I'd be surprised if many were more inaccurately presented than this one. True, it's fiction. Even given that, the film makers could have made some attempt to introduce the *real* grizzly to the American public. But the fact is—the *real* grizzly doesn't fit the role they cast.

More important, how does one producer's insensitivity toward nature and accuracy affect Montana's most magnificent mammal, the grizzly?

Today, the grizzly's future appears doubtful. The big bear's dilemma arises mainly from shrinking habitat. Without large undeveloped and wild areas, the bear can't survive.

Perhaps the second most serious threat to the silvertip is public intolerance. Nationally, many millions fear and hate the grizzly. They resent the national forests and parks being "infested with these beasts." With sentiment running against the grizzly like this, it becomes nearly impossible to increase, or at times even stabilize, the bear population. Thus, films like this set sincere efforts to stabilize grizzly numbers back years.

Granted, the grizzly has killed a few humans. And with each bloody bear/man incident comes sentiment to rid the forests of the big bears. The grizzly is unpredictable and powerful, no doubt. But

continued

recycled paper

the bear presents a remote danger to wilderness users—especially when compared with other threats such as serious illness, falls, hypothermia, lightning, etc.

During the movie, I watched the audience, which incidentally, was packed with children. Each time "Grizzly" tore someone apart, spectators screamed. Children covered their eyes. Then, at the end when the "hero," Ranger Kelly, blew the bear apart with a rocket launcher, the crowd cheered like the home team had just pulled the game out in the final seconds. This was especially sad, as I thought of our children growing up thinking *this* is the grizzly bear haunting the Montana wildlands. Will these children seeing "Grizzly" ever support efforts to preserve grizzlies or wildlands?

After "Jaws," a market for shark jaws and teeth exploded. "They kill every shark they can find down here, even three-foot dogfish," a friend from Texas told me about a month ago. "A good-sized jaw brings a couple hundred dollars. And they get 12 bucks for one shark tooth on a little gold chain," he added.

Fortunately, because Montana grizzlies are game animals, sound management insures a degree of protection. Sharks have no such protection. Nonetheless, will a black market for grizzly teeth, claws, skins, etc. come out of the distribution of "Grizzly"?

Luckily, this movie, unlike "Jaws," was poorly done. So we can only hope it won't have equal impact. —*Bill Schneider*

the jaws game

"Jaws," "Grizzly" and possible future movies on that theme have a light side.

For instance, a recent issue of *Runner's World* carried a spoof about a mad dog attacking runners. The title? "Paws," of course.

Russ McKee, editor of the *Michigan Natural Resources* magazine, recently went to some length reviewing a new book and movie called "Gums." "Gums" was a 25-foot, toothless lake trout that "gummed" pigs and people to death in the Great Lakes. After several fatalities, local heroes hunted down "Gums" with depth charges and, to their satisfaction, finally rid the Great Lakes of this menace. However, "Gums" was not dead, McKee noted, only hiding in the depths of Lake Michigan and yes, reproducing.

Naturally, this set the stage for a sequel—"The Son of Gums." And these two movies created so much public furor that the networks prepared a TV documentary, "The Gums of Autumn." (It was so controversial that the networks had trouble finding sponsors, but Munchy Chewing Gum, Inc. finally footed the bill.)

Surely, there will be enough take offs on this theme to keep film makers busy for years. We've heard, in fact, that the next one will be about the Loch Ness monster suddenly turning carnivorous and chewing up underwater photographers. The title? "Loch-Jaws."

Other possibilities include "Caws," about a giant crow; or "Pinchers," about a 50-foot lobster who, in revenge, only eats people who make $50,000 per year or more, or "Gnaws," about a population explosion of 1,000-pound beavers. But the ultimate movie is "Lamprey." Imagine the press kit billing on this one: "This movie really sucks."

for the flathead-now or never

Today, there is only one North Fork of the Flathead. But tomorrow, there might not even be one.

As we've explained in detail over the last two years in *Montana Outdoors,* energy development threatens the semi-remote North Fork drainage from both sides of the border.

To preserve the desirable qualities of the North Fork—and the rest of the Flathead watershed, including Flathead Lake—the residents of northwestern Montana banded together as the Flathead Coalition. This citizens' group is pleasantly unique. Most groups have an opposing faction of society. This is true in the Flathead—i.e., two sides of the snowmobile, timbering and subdivision controversies represented by various citizens' groups. But this time the entire community locked arms in a unified front, all for the North Fork.

Maintaining the North Fork in its present condition is a social, economic *and* environmental issue. And this is reflected in the Flathead Coalition which contains members from nearly every corner of society.

But the problem is still enormous and complex. It may seem like trying to beat back the inevitable. But it isn't. If everybody does his or her part, future generations will know the same North Fork we know today. To make this possible, though, it takes an active and angry citizens' group like the Flathead Coalition. As with all organizations of this type, initial enthusiasm must be converted into a long-term, steady effort.

The coalition needs help. And it needs it now. Show your concern about the Flathead—help keep Montana Montana—by supporting the coalition. For more information, write Mrs. Ginger Agee, Flathead Coalition, 351 Hilltop Drive; Kalispell, MT 59901. —*Bill Schneider*

recycled paper

MOUNT HAGGIN

Part of the Mount Haggin Ranch (F&G photo: Tom Warren)

AN INVESTMENT FOR THE FUTURE

by Glenn Oakley

The monarch bull elk nipping bluebunch wheatgrass up French Gulch may not notice any change at first. The moose, mouth full of willows, will never know who owns the land it lives on. But the land title has changed hands and the change means a bright future for elk, moose and all wildlife on the Mount Haggin Ranch.

The Montana Dept. of Fish and Game has completed the largest land acquisition in its history. The department, together with the Forest Service (FS), has acquired about 76,000 acres of land 20 miles west of Butte. The land, formerly part of the Mount Haggin Livestock Ranch, stretches from just south of Anaconda (north of the Continental Divide) and across the divide to the foothills of the Beaverhead National Forest. West of the acquired property looms the Anaconda-Pintlar Wilderness which extends eastward to the Deerlodge National Forest. (See map.)

The department acquired about 53,000 acres, much of it lower elevation game range. The FS share totaled some 23,000 acres, primarily high, mountainous country. The FS may buy additional land over the next five years as money becomes available.

The Mount Haggin country is diverse. Large meadows roll up to thickly forested slopes of Douglas fir, lodgepole pine, larch and spruce.

Aspen groves dot alpine meadows where elk seek relief from the summer heat. High, bare granite and limestone peaks rise along the Continental Divide to heights over 10,000 feet, towering over moose-haunted willow marshes below. Black bear and mountain lion hunt the land in the still of the night. Bighorn sheep bound up sheer walls. Sandhill cranes nest here in meadows carpeted with wildflowers. Over 60 miles of streams offer catches of cutthroat, rainbow and brook

continued

trout and some 20 lakes nestle in pockets of the glaciated mountains. Although Highway 274 bisects the ranch and logging roads wind back into the foothills, much of the ranch is roadless.

All this has been preserved for wildlife and the public through efforts of the Montana Fish and Game Commission, The Nature Conservancy, Bureau of Outdoor Recreation (BOR), Forest Service, Montana Gov. Thomas L. Judge, the Montana congressional delegation and local sportsmen's groups.

For instance, Gov. Judge played a key role in urging the U.S. Dept. of the Interior to release funding. "For the people of this nation, the citizens of Montana and the natural resource values at stake, I urge you to intervene in favor of this acquisition. It is rare opportunity that awaits your action," Gov. Judge wrote to Interior Secretary Thomas S. Kleppe. "The consequences of what we do . . . will affect both the land and the people of this country for generations to come," the governor concluded.

The acquisition is a boon to wildlife and sportsmen alike. As department biologist Mike Frisina of Butte put it, "If we hadn't bought Mount Haggin, we'd have been in trouble." Developers probably would have carved it into ranchette summer homes, inevitably destroying the very thing the home buyers had sought—uncrowded living conditions with abundant wildlife.

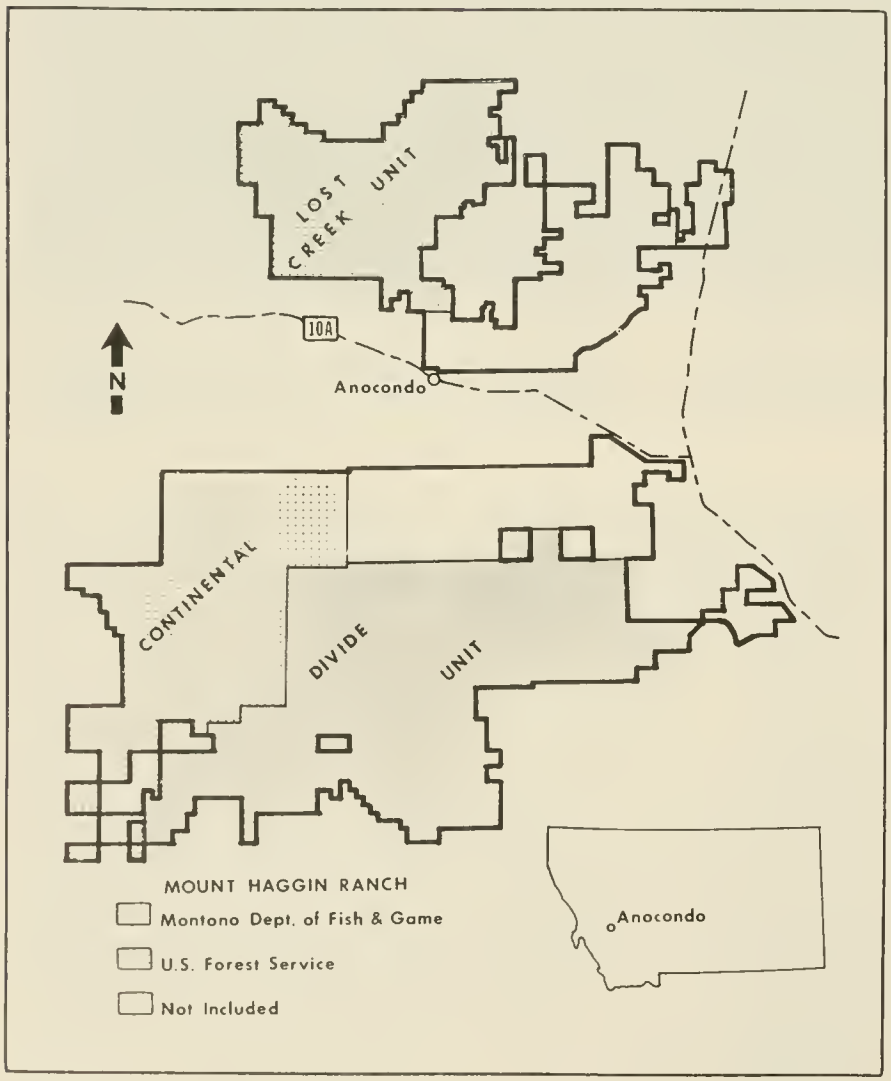
Before the acquisition, the ranch often was closed to hunters and fishermen. Recently, hunting with permission had been allowed, but cattle frequently were still in the backcountry when the season opened, precluding any hunting.

Domestic stock competed with elk and deer for food, and the livestock usually won. Rumors of subdivisions worried sportsmen because elk migrated through the ranch in late autumn on their way to the High Rye Elk Winter Range, another wildlife area purchased by the department. If the ranch had fallen into the subdividers' hands, elk might have had trouble reaching their wintering area.

With wise game management and eventual removal of heavy cattle grazing, not only will elk herds increase, but elk might use the ranch as wintering ground, a vital part of the year-round habitat needs. Lee Masters, president of the Butte Skyline Sportsmen's Assn., said the area is historic winter range for elk and deer. When an area is returned to the wild, animals often thrive in places where they have not been seen in years, Frisina noted. Moose should also increase, he said, as cattle are removed from the willow bottoms. According to Frisina, "some pretty tremendous small stream fishing" also exists. In addition, this large section of land should decrease hunting pressure in surrounding areas by opening more land, once private, to the public.

These outdoor opportunities lie within a four-hour drive from six of Montana's largest cities: Great Falls, Butte, Billings, Missoula, Helena and Bozeman. The area is particularly accessible to persons in Butte and Anaconda. "That's what makes the hunting so great," said Lorry Thomas, former president of the Anaconda Sportsmen's Club. "It's only five minutes out of town. Guys can hunt this after getting off work," he noted.

The Nature Conservancy, a nonprofit corporation which helps public and private conservation groups acquire and preserve wild areas, originally



wanted to purchase the land four years ago. Ken Margolis, Northwest director, said Mount Haggin was "number one on our list for Montana." Because of the area's diversity and wilderness, he said, it was imperative to protect it. He emphasized few large tracts of private land are left in the state that haven't been developed. He called Mount Haggin and the Crazy Mountains, northwest of Big Timber, the "best stuff we have left in the state."

Although the ranch was not officially for sale in 1972, The Nature Conservancy convinced the owner, William O'Neil, to sell part of it. Serving as broker, The Nature Conservancy bought and then sold the 76,000 acres to the Dept. of Fish and Game and the FS at cost. The 76,000 acres cost $4.1 million; the department paid $2.9 million for its land and the FS paid $1.2 million. (The Nature Conservancy has credit which enables it to negotiate costly deals, thus "buying" the FS and the department time to gather money for such purchases.)

Funding for the acquisition came from numerous sources. O'Neil, owner of the property, donated $1 million to The Nature Conservancy which in turn passed it on to the Dept. of Fish and Game. Money for the FS purchase came from a special appropriation from the Land and Water Conservation Fund. The Dept. of Fish and Game also received $1 million from the BOR contingency fund, a special source for emergency acquisitions. The Montana congressional delegation and Gov. Judge helped obtain this money for which all 50 states compete. Revenue from Montana hunting and fishing licenses provided $450,000. This was matched by the same amount from BOR. (BOR money comes from the Land and Water Conservation Fund.)

The Nature Conservancy has a five-year option to buy additional acres of the ranch. Still serving as broker, it will buy the land and resell it to the FS, as FS money becomes available.

The Lost Creek Unit, separate from the main ranch, falls under this option. It is a spectacular area with sheer limestone cliffs and craggy peaks, home to mountain goats and bighorn sheep. Lost Creek, north of Anaconda, also provides prime winter range for elk, deer and bighorn sheep. Garrity Cave, a partially explored cavern with beautiful stalactite and stalagmite formations, also lies within the Lost Creek Unit. According to Margolis, Lost Creek encompasses such important winter range, it should be managed by the department.

Local sportsmen's groups worked hard for the Mount Haggin acquisition, urging the Fish and Game Commission and Montana's congressional delegation to support the purchase. The Skyline Sportsmen's Assn. and the Anaconda Sportsmen's Club sent strong representation to the public hearing in Anaconda on the acquisition. Masters estimated "90% of the people" at the public hearing favored the acquisition. He said buying land is the "best way we can spend our money. That's where our money should be spent, not on big development." In addition, Ray Tarkalson, a member of the Anaconda Sportsmen's Club, gathered 400 signatures on a petition supporting the acquisition.

Some ranchers were concerned about the loss of county taxes that would accompany public control and were opposed to more publicly owned land in the county. However, the Dept. of Fish and Game will pay Deer Lodge County $10,168.22 per year and Silver Bow County $1,344.55 per year in lieu of property taxes. (Most of the ranch lies within Deer Lodge County.) Loss of property tax revenues on land purchased by the FS will amount to 17/100 of 1% of Deer Lodge County's 1974 total tax revenues—a small price for so much wildlife habitat and recreation potential.

But it will take wise management to realize these potentials. The FS will develop a multiple-use plan for its area with recreation the primary use. FS land adjacent to the Anaconda-Pintlar Wilderness will be studied for possible addition to the wilderness area.

The department will manage its land for dispersed recreation, giving particular attention to returning the land to a more natural state and increasing wildlife populations. Hiking, hunting, fishing and picnicking are just a few of the recreational possibilities. Biologists will determine habitat types, condition of the land and where the roads and wildlife are. The many prospectors' cabins and homesteads which dot the ranch will be surveyed to determine if any have historical significance.

The department will also design a comprehensive plan for the area, deciding (1) what, if any, developments will be made, (2) whether cattle grazing should be allowed, (3) how the wildlife will be managed and (4) what roads will be left open, blocked or built.

Unfortunately, returning the land to a more natural condition won't happen overnight. Louisiana-Pacific, a private timber company, holds a previous contract with the ranch which allows it to log until 1988 all trees four inches in diameter or greater. Over 9,000 acres have already been cut.

O'Neil has a five-year lease to graze cattle on the department's land. The lease will allow him to gradually phase out his cattle operation.

But the acquisition is an investment in the future. This land has been protected from development—development which usually means destruction to wildlife habitat, the landscape and the wonders of wildlands. With increasing development and more intensive land uses, Mount Haggin, now assigned a "value" of $4.1 million, will be priceless to future generations.

painting by Karl Bodmer, courtesy of the Montana Historical Society

Lewis and Clark Meet the Awesome White Bear

by Ken Walcheck

The Missouri River, in the vicinity of Great Falls, Mont., was in historic times truly a man's river—a great snag-toothed, turbulent river that suddenly dropped hundreds of feet in seething, foamy torrents over five falls and a series of cascading rapids. It was a Charlie Russell River, wild and colorful, a river bristling with excitement and adventure as it surged through bottomlands teeming with elk, buffalo and antelope.

It was a place—and still is—where capricious and angry winds blow, where a scorching summer's day can suddenly whip into a driving hailstorm, where a warm chinook wind can come barreling out of the southwest riding the back of an arctic air mass and where white, pillow-like clouds float across blue skies on calm and sunny days. It was the kind of place that could make a man feel small, which is how he should feel when he views a stretch of country that draws its nectar from the big sky.

Such a land as this, raw one moment and taciturn the next, was a land that once grew and nourished the "great white bear"—the grizzly.

Historical archives reveal that Meriwether Lewis and William Clark were not the first white men to record occurrence of the grizzly in North America. In 1666, a Jesuit missionary, Claude Jean Allouez, wrote in his journal of Indians who were ". . . eaten by bears of frightful size, all red, and with prodigiously long claws." However, some historians say Allouez merely recorded the observations of Indian tribes in the area of present-day Winnipeg, Manitoba. The Historical and Scientific Society of Manitoba credits Henry Kelsey, a young Englishman employed by the Hudson's Bay Co., with first recording a description of the grizzly in northwestern Canada in 1691. Edward Umfreville, fur trader for the Hudson's Bay Co. from 1784-87, was probably the first to report the species in the Rocky Mountains. Alexander MacKenzie, Canadian explorer, recorded grizzlies in the Peace River Country of Canada in 1793. In 1800, Alexander Henry observed the grizzly in the Red River Valley of North Dakota.

Despite these earlier documentations, it was Lewis—with his observant eye and active pen—who provided the first scientific data on the geographic range, habits and physical characteristics of the species.

The first reference to the grizzly by the explorer-naturalists was reported in South Dakota by Clark on Sept. 1, 1804 on the banks of the Missouri River about 25 miles below the mouth of the Niobrara River. Clark wrote, "above the Isd. the high land approach form a Clift to the river on the S.S. [south side]. this Clift is Called White Bear Clift one of

these animals haveing been killed in a whole in it."

The first grizzly actually observed during the expedition's western trek was sighted Oct. 20, 1804, near the mouth of the Heart River, North Dakota. On this date a hunting party wounded a grizzly and Clark reported seeing "several fresh tracks of those animals which is 3 times as large as a mans track."

After crossing the 104° meridian into Montana, grizzlies were observed frequently between the mouth of the Yellowstone River and Great Falls. By the time the party reached White Bear Island at the mouth of the Sun River, nearly every member of the expedition could boast of a chase by the high-shouldered carnivore.

MONARCH OF THE PLAINS

The Corps of Discovery, as the expedition was called, wintered in 1804-05 near the "Mandan villages" occupied by Minitaris and Amahamis as well as the Mandans. During the long winter nights, the Indians told of many encounters with the dread white bear. They described the strength and ferocity of the monarch of the plains—a beast they would not dare attack with less than six hunters and preferably more. They spoke of hunters who had missed their target with their frail wooden projectiles and "fell sacrifice" to a charging bear. They further related how they would paint themselves and perform certain ceremonial rituals before waging war with the great white bear.

The explorers discounted the Indians' tales about the grizzly as gross exaggerations. But before the end of the summer, the explorers' understanding of grizzly bears and grizzly hunting expanded greatly.

Entries from Lewis' diary relate some of the expedition's exciting encounters with the grizzly in what is now Montana. They suggest excellent reasons why the two leaders revised their thinking about the great white bear. Their graphic accounts with the grizzly are as exciting as any fictional best-seller.

While at the mouth of the Milk River on May 11, 1805, Lewis wrote:

"About 5 PM my attention was struck by one of the Party running at a distance towards us and making signs and hollowing as if in distress, I ordered the perogues to put too, and waited until he arrived; I now found that it was Bratton, the man with the soar hand whom I had permitted to walk on shore; . . .; at length he informed me that . . . he had shot a brown bear which immediately turned on him and pursued him a considerable distance but he had wounded it so badly that it could not over takehim, I immediately turned out with seven of the party in quest of this monster, we at length found his trale and pursued him about a mile by the blood through very thick brush of rosbushes and the large leaved willow; we finally found him concealed in some very thick brush an shot him through the skull with two balls; we proceeded to dress him as soon as possible, we found him in good order; it was monstrous beast, . . .; we now found that Bratton had shot him through the center of the lungs, notwithstanding which he had pursued him near half a mile and had returned more than double that distance and with his tallons had prepared himself a bed in the earth about 2 feet deep and five long and was perfectly alive when we found him which could not have been less than 2 hours after he received the wound; these bear being so hard to die reather intimedates us all, I must confess that I do not like the gentlemen and had reather fight 2 Indians than one bear; there is no chance to conquer them by a single shot but by shooting them through the brains, and this becomes difficult in consequence of two large muscles which cover the sides of the forehead and the sharp projection of the center of the frontal, which is also of pretty good thickness."

On May 14, 1805, on the banks of the Missouri near the vicinity of Hell Creek on Fort Peck Lake, Lewis wrote:

"one of the party wounded a brown bear very badly, but being alone did not think proper to pursue him. In the evening the men in two of the rear canoes discovered a large brown bear lying in the open grounds about 300 paces from the river, and six of them went out to attack him, all good hunters; they took advantage of a small eminence which concealed them and got within 40 paces of him unperceived; two of them reserved their fires as had been previously conscerted, the four others fired nearly at the same time and put each his bullet through him, two of the balls passed through the bulk of both lobes of his lungs, in an instant the monster ran at them with open mouth, and the two who had reserved their fires discharged their pieces at him as he came towards them, boath of them struck him, one only slightly and the other fortunately broke his shoulder, this however only retarted his motion for a moment only, the men unable to reload their guns took to flight, the bear pursued and had very nearly overtaken them before they reached the river; two of the party betook themselves to a canoe and the others separated and concealed themselves among the willows, reloaded their pieces, each discharged his piece at him as they had an opportunity they struck him several times again but the guns served only to direct the bear to them, in this manner he pursued two of them separately so close that they were obliged to throw aside their guns and pouches and throw themselves into the river although the bank was nearly 20 feet perpendicular; so enraged was this animal that he plunged into the river only a few feet behind the second man . . .; when one of those who still remained on shore shot him through the head and finally killed him; then they took him on shore and butchered him when they found eight balls had passed through him in different directions."

continued

"POWER OF THE ROUND BALL"

The Corps of Discovery's encounters with the grizzled carnivore were accurately documented but little has been said by historians about the "power of the round ball." Lewis, Clark and at least 13 of their men were armed with the short-barreled .54 caliber Harpers Ferry, 1803 model. The remainder of the men probably carried their own personal long-barreled Kentucky flintlock rifles using bullets of .40 or .44 caliber. Most authorities on the guns used by the Lewis and Clark Expedition agree the Kentucky rifle was quite accurate at long ranges and had sufficient penetrating power. But the smaller projectiles, traveling at only medium velocity, lacked the "mushrooming" effect and adequate shocking power of a modern high-powered cartridge. As a result, they were totally inadequate for a formidable adversary such as the grizzly. The power of the round ball was well documented by Lewis' entry on May 5, 1805, somewhere below the mouth of the Milk River:

"Capt. Clark and Drewyer killed the largest brown bear this evening which we have yet seen. it was a most tremendious looking animal, and extreemely hard to kill notwithstanding he had five balls through his lungs and five others in various parts he swam more than half the distance across the river to a sand bar, and it was at least twenty minutes before he died; he did not attempt to attack, but fled and made the most tremendous roaring from the moment he was shot."

Some five weeks later, on June 14, 1805, Lewis wrote of a most memorable encounter with a large, white bear, while investigating a portage route around the Great Falls of the Missouri River. As Lewis returned to the Missouri, he came across a large herd of buffalo and promptly shot one. While waiting for the animal to die—and neglecting to recharge his gun—he was suddenly shocked to see a grizzly lumbering toward him about 20 paces away. Holding an empty weapon, Lewis quickly surveyed the terrain and noted to his dismay there wasn't a tree within 300 yards, nor any depression where he might conceal himself and charge his gun.

Lewis thought a slow retreat might be prudent, but as soon as he turned toward the river, a distant 80 yards, the bear suddenly charged with churning legs and open mouth. Lewis bolted across the prairie with the bear fast on his tail and rapidly closing the distance. He decided to plunge into the cold waters of the Missouri where he might better defend himself. After diving into waist-deep water, Lewis turned and pointed his espontoon (a short staff with a pike point at one end) at his adversary. The grizzled warrior, for some unknown reason, declined to engage in combat, turned and ran full speed across the level plain.

Grizzlies were quite numerous in the vicinity of Great Falls and 10 were killed by the expedition here. Lewis' diary entry for June 17, 1805 leads one to conclude that the bears fed extensively on the carcasses of dead buffalo which had been swept over the falls while attempting to swim across the river. He wrote: "Their mangled carcases lie along the shores below the falls in considerable quantities and afford fine amusement for the bear, wolves and birds of prey; this may be one reason, and I think not a bad one either, that the bear are so tenatious of their right of soil in this neighborhood."

On its westward journey, the expedition's last report of seeing a grizzly occurred near the vicinity of Waterloo, Mont. on the Jefferson River on Aug. 1, 1805.

While wintering at Fort Clatsop (near present-day Astoria, Ore.) in 1805-06, Lewis finally had sufficient time to review his notes and think about the relative distribution of the grizzly. His resume, written Feb. 16, 1806, is excellent when one considers the primary purpose of the expedition was not biological. He wrote:

"the brown, white or grizzly bear are found in the Rocky Mountains in the timbered parts of it or Westerly side but rarely; they are more common below the Rocky Mountain on the borders of the plains where there are copses of brush and underwood near the water courses. they are by no means as plenty on this side of the Rocky Mountains as on the other, nor do I believe that they are found at all in the woody country, which borders this coast as far in the interior as the range of mountains [Cascades] which, pass the Columbia between the Great Falls [Celilo Falls] and rapids of that river.

RETURNING EASTWARD

On the return trip east, six grizzlies were killed west of the Continental Divide while the party camped in the Clearwater Valley near Kamiah, Idaho during May 1806. On their eastern trek through Montana, 14 grizzlies were killed east of the Rocky Mountains in the Yellowstone and Missouri River valleys.

Lewis had yet another skirmish to report, this one at Willow Run above the Great Falls of the Missouri River, on July 15, 1806:

"a little before dark McNeal returned with his musquet broken off at the breach and informed me that on his arrival at willow run [on the portage route] he had approached a white bear within ten feet without discovering him the bear being in the thick brush, the horse took the allarm and turning short threw him immediately under the bear; this animal raised himself on his hinder feet for battle, and gave him time to recover from his fall which he did in an instant and with his clubbed musquet he struck the bear over the head and cut him with the guard of the gun and broke off the breach, the bear stunned with the stroke fell to the ground and began to stratch his head with his feet; this gave McNeal time to climb a willow tree which was near at hand and thus fortunately made his escape. the

GAME KILLED BY THE LEWIS AND CLARK EXPEDITION*

deer (all species)	1,001
elk	375
bison	227
antelope	62
bighorn sheep	35
grizzly bears	43
black bears	23
beaver	113
otter	16
geese and brant	104
ducks and coots	45
grouse (all species)	46
turkeys	9
plovers	48
wolves (one eaten)	18
Indian dogs (purchased and consumed)	190
horses (consumed)	12

*Compiled from "The Natural History of the Lewis & Clark Expedition," by Raymond Darwin Burroughs

bear waited at the foot of the tree until late in the evening before he left him, when McNeal ventured down and caught his horse which had by this time strayed off to the distance of 2 Ms. and returned to camp. these bear are a most tremendous animal; it seems that the hand of providence has been most wonderfully in our favor with rispect to them; or some of us would long since have fallen a sacrifice to their farosity."

Lewis also had numerous opportunities to observe several different color phases of the grizzly which ranged from bay-yellow to jet-black. One can appreciate the questions and doubts he must have entertained when trying to decide if he was dealing with more than one species of bear. Lewis, an excellent biological reporter, finally decided that a single species was involved. He wrote:

"I am induced to believe that the Brown, the white and the Grizzly bear of this country are the same species only differing in color from age or more properly from the same natural cause that many other anamals of the same family differ in coulur, one of those which we killed yesterday was of a cream colored white while the other in company with it was of the commen bey or redish brown, which seems to be the most usual colour of them . . . there is no such anamal as a black bear in this open country [Great Falls area] or of that species generally denominated the black bear."

Lewis' detailed description of the grizzly led to its recognition as a distinct species. The grizzly bear was technically described in 1815 by George Ord, a Philadelphia naturalist, who relied heavily on Lewis' description. Ord selected *Ursus horribilis,* "the horrible bear," as the scientific name. (The subspecies found in Montana is known as *Ursus arctos horribilis.)*

Raymond Darwin Burroughs, author of "The Natural History of the Lewis & Clark Expedition," compiled a list of game killed by members of the expedition from May 14, 1804-Sept. 24, 1806. (See chart.) Because Lewis and Clark were inconsistent in recording total kill figures for all species, Burroughs' suggested totals represent minimum kill figures.

He indicates 43 grizzlies were killed by the explorers, the majority in Montana. Why were so many grizzlies killed and for what purpose?—surely not for food because one finds little evidence in the journals of the explorers eating bear meat. It is doubtful all of the bears were rendered for bear oil. It also remins extremely doubtful the explorers killed all of the grizzlies in actual "showdown" confrontations. One must question the sincerity of Lewis' statement, "altho' game is very abundant and gentle, we only kill as much as is necessary for food." The white bear, in many situations, probably represented a challenge exceedingly difficult for the hunters to pass up.

TELLING THE TALE

As the Lewis and Clark encounters with the great white bear were told, revised and revitalized over a thousand campfires, the ferocity of the grizzly grew in direct proportion to the number of times the tales were told. Encounters with grizzlies by later explorers added more zing and zest to the tales and in short order Old Ephraim gained a sinister reputation surpassing that of any other North American carnivore. Writers, armed with active pens and artists with energetic paintbrushes, portrayed the grizzly as a killer—an unsavory quadruped to avoid at all costs. Unfortunately, the grizzly's true character has seldom been depicted in its proper perspective.

Sept. 23, 1806 marked the journey's end for the Corps of Discovery. The beckoning cries of a growing nation would soon separate and scatter the triumphant members of the expedition. But until their final days, they shared vivid memories of their monumental journey that would make them stand a notch taller than most men. Memories of one of the most dramatic and significant episodes in the history of the United States; of adventure, new discoveries and notable achievements; of blunders, miscalculations and tragedy; of shining mountains, majestic rivers and sweeping scenes of visionary enchantment; of tangled forests, raging rapids and spiny blankets of prickly pear; of bellowing buffalo herds and verdant bottomlands teeming with elk, deer and antelope; of meddlesome mosquitoes, gnats and rattlesnakes; of hunger, fatigue and sickness; of travels through new lands enveloped in mystery, fantasy and rumor; and memories of awesome white bears that would in time serve as a symbol in reminding Americans that only a fragment of the original wilderness that Lewis and Clark knew still remains.

CAN THE SAGE GROUSE SURVIVE?
—see page 22